

KAKAAKO COMMUNITY FOR SENIORS WITH ALZHEIMER'S

*- Retrofitting the current Kakaako district into a versatile and
all-inclusive community -*

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ABSTRACT

The aim of this thesis is to design a community based nursing facility for individuals afflicted with Alzheimer's disease within the bustling new neighborhood of Kakaako.

Kakaako (a Honolulu neighborhood) is undergoing a redevelopment phase and it is of utmost importance to predict its demographic needs in the early stages of the urban redevelopment process. The population growth in this neighborhood is already evident by many completed residential high-rises amid the light industrial milieu. Research has shown that the existing residential neighborhoods in Kakaako have roughly 3% of their population afflicted with, and another 12% (immediate family caregivers) affected by Alzheimer's disease. However, none of the existing or proposed developments in Kakaako offer Alzheimer's nursing care services. Creating nursing facilities for this population within walking distances of their family members is of crucial importance for the quality of lives for both patients and their loved ones for reasons elaborated in this thesis.

Furthermore, latest research has shown that long-term care providers, in order to truly enhance the patients' lives, need to adopt the modern "culture change" ideas when designing and operating nursing facilities. This thesis adopts the Green House model, one of the growing "culture change" practices in the US. While this model recognizes the structural/architectural reorganization of space as a major component, it emphasizes the people-centered approach in providing care to the elderly, especially those afflicted with Alzheimer's disease.

This thesis takes all these considerations into account. The methodology in the thesis combines demographic, cultural, structural and architectural aspects into the design. It i) starts with the analysis of Kakaako demographics, ii) uses the demographic findings to locate a proper lot for the facility, iii) justifies its size, functionality, marketability and replicability by cross-correlating existing facilities, government and state regulations, local population needs, and modern literature findings, and iv) proposes the design. The culmination of the thesis is the design of a 7-story 55-bed modern family-friendly Alzheimer's nursing home in Kakaako.

DEDICATION

To my family.

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1. INTRODUCTION

This is the research section of the overall dissertation document. The project statement, project goals and research questions are elaborated under the following corresponding subtitles.

1.1 Project Statement:

The older population (persons 65 and older) is increasing all around the world. The development of science and technology in the field of medicine caused an increase in life expectancies. In the last fifty years, worldwide life expectancy at birth has increased by almost 20 years, from 46.5 years (recorded in 1950-1955) to 66.0 years (recorded in 2000-2005).¹

The rapidly aging population already presents a serious issue for some developing countries by placing a huge economical burden on the working-age population.² In the US this issue is rapidly approaching the focal point. Americans 65 years and older presented 13% of the entire population in the year 2010, and the percentage is expected to grow up to 19% by the year 2030.³

In order to explore ways of maintaining the integration of the elderly in the community, this dissertation focuses on the Kakaako district in Honolulu. The interest in Kakaako is based on the fact that it represents a unique condition in the central part of Honolulu. It is a neighborhood with an industrial character in close proximity to the prime city locations.⁴ Since the zone change (from industrial to residential/commercial) in 1982, Kakaako become potentially attractive for high-density residential developments. The Hawaii Community Development Authority (HCDA) envisioned for Kakaako to become a versatile and all-inclusive community upon the completion of all proposed developments in the area.⁵ Therefore, the district offers an opportunity to plant the seeds of the desired integration early on in its redevelopment process. The intent of this

1 - Population Division, DESA, United Nations, *World Population Ageing: 1950-2050*, (New York: United Nations Publications, 2001), <http://www.un.org/esa/population/publications/worldageing19502050/> (accessed August 10, 2012), 6.

2 - Ibid., xxix.

3 - Administration on Aging; "Aging Statistics," http://www.aoa.gov/aoaroot/aging_statistics/index.aspx (accessed August 12, 2012);

U.S. Census Bureau; "Age and Sex Composition: 2010," (2010 Census Briefs, Issued May 2011), <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf> (accessed August 10, 2012).

4 - HCDA; "Mauka Area Plan," (Mauka Area Plan and Rules, 2011), <http://dbedt.hawaii.gov/hcda/files/2013/02/Mauka-Area-Plan-EFF-2011-10-31.pdf> (accessed August 23, 2012), 1-3. (hereafter cited as HCDA. Mauka Plan).

5 - Ibid.

dissertation is to analyze the full potential of the current transitional condition of the Kakaako district, and its openness towards all demographic groups, the elderly generation in particular.

More precisely, this dissertation focuses on the needs of the growing elderly population afflicted with Alzheimer's disease. National estimates show that patients afflicted with Alzheimer's disease represent 13% of all Americans 65 years and older.⁶ As the number of the elderly continually increases, the number of people with Alzheimer's disease continues to escalate. Interestingly, without a cure at the horizon, this disease is threatening to become the number one cause of death in the near to mid-term future.⁷ Therefore, the characteristics of our new/existing communities that we want to develop/redevelop will inevitably need to change towards meeting the requirements of this growing population.

The research process for this dissertation consists of two phases. In the first phase, I determine the market demand and the neighborhood potential in Kakaako for development of an **Alzheimer's Care and Family Support Center**. The main criteria for the site selection is the site's potential to enable integration/reintegration of the elderly afflicted with Alzheimer's disease and their families in the communal life. This phase of the research includes an overview of the latest tendencies and non-drug therapy programs in the field of the long-term care industry. At the end of this phase I select the long-term care facility type suitable for the current needs of the people afflicted with Alzheimer's disease residing in Kakaako. For the selected long-term care facility type I provide the new evidence regarding architectural/spatial requirements.

The second phase of the research is the design project for the Alzheimer's nursing facility in Kakaako. This design aims to directly reflect the current Kakaako community needs, and incorporate the latest tendencies in the field of the long-term care industry.

1.2 Project goals:

The research goals are:

6 - Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 14.

7 - Ibid., 23.

1. **To determine the specific needs of the individuals afflicted with Alzheimer's disease and their families living in Kakaako.**
2. **To determine a potential site (or sites) in the Kakaako district,** adequate for the project that would enable immediate support to the families whose members are afflicted with Alzheimer's disease.
3. **To propose a long-term care project type,** that would be the best fit for the current needs of families whose members are afflicted with Alzheimer's disease in Kakaako.

The design goals are:

1. **To propose a project that would serve walking-distance (approximately 125 acres area) communities in Kakaako.** The project should provide a family-friendly solution for its immediate neighborhood. The design should be developed as a walking-distance neighborhood intervention with the potential to become repeated throughout Kakaako/Honolulu.
2. **To engage the immediate community into activities of the Alzheimer's Care and Family Support Center. The center should offer at least 2 functions:**
 - a) Provide a community-based solution for the families and their loved ones afflicted with Alzheimer's disease.
 - b) Promote public awareness by educating about the issues and the specific needs of the elderly with dementia.

For instance, the project should include intergenerational programs that engage nursing facility residents, children or students from local schools, in various recreational activities (e.g., gardening, painting, etc.).

3. **To apply sustainable design solutions.** Design strategies should implement economical, social, and environmentally sustainable solutions.

1.3 Research questions:

The research topic is shaped by the following research questions:

- **What do the Kakaako demographic data imply?**
 - How quickly is the elderly population in Kakaako (and Honolulu) growing?
 - What is the social and economic situation of the elderly population in Kakaako?
- **What are the specific needs of the elderly afflicted with Alzheimer's disease in Kakaako?**
- **Is Kakaako prepared for a rapidly ageing population?**
 - Is the current HCDA's plan for the redevelopment of Kakaako district designed to create a demographically versatile and all-inclusive environment?
 - Does the plan include solutions suitable for the elderly population?
 - Does the plan promote safe, pedestrian-oriented, and all-inclusive community solutions on all levels of the Kakaako urban milieu, from the neighborhood (macro) to the building lot (micro) level?
 - What are the current facts of the Kakaako redevelopment process? (Old vs. new developments.)
 - Does Kakaako currently offer solutions that serve the needs of the elderly?
 - What is the current relationship between the market-priced and affordable (dedicated to seniors) residential developments in Kakaako?
 - What is the current relationship between the new residential and long-term care developments in Kakaako?
- **Does Kakaako have the potential to become the neighborhood for people of all ages?**
- **What are the major operating expenses for nursing facilities?**
- **What are the existing business model types for nursing facilities?**

- Which business models are the most successful in terms of reducing operating costs, adjusting their operations to fit the shifting market conditions, and most importantly, offering the best life style to the residents?

- **What is the current situation in Honolulu?**

- What business models prevail on the local market?

- **What can be done to make things better than they currently are?**

2. RESEARCH METHOD AND TACTICS INTENDED TO BE USED IN DATA COLLECTION AND ANALYSES/INTERPRETATIONS

2.1 Interpretive-historical method:

The main focus of this method is to define the specific needs of the elderly afflicted with Alzheimer's and their family caregivers in Kakaako. I compare several groups of evidence in order to understand and analyze the following major topics:

- 1)The growth of the elderly population in the world and in the US.
- 2)The existing knowledge on Alzheimer's disease in the medical field.
- 3)Alzheimer's non-drug therapy programs.
- 4)Families living with Alzheimer's disease in Hawaii - Kakaako.
- 5)The Kakaako district - physical context.
- 6)Architectural implications.

I present the gathered information in the extended literature review section of this dissertation. This is a critically important section for the development of the final project program proposal and the design solution presented in the research section of this dissertation.

2.2 Site visits and data collection:

There are two levels of the site information collection: the wide Kakaako community level and the selected site level (selected lots and their surroundings). The Kakaako community level data includes information about the physical environment, current land uses and construction phases of new developments in the area. Thorough analysis of the community enabled us to select the site for the long-term care facility project. Consequently, the conducted analysis provided the following information about the selected site: current land uses, site accessibility, public and private transportation, surrounding neighbors, etc.

In addition to the conducted site visits and analyses, I collected the necessary design data by paying personal visits to the Alzheimer's Association Aloha chapter (located at 1050 Ala Moana Boulevard), the HCDA's office (located at 461 Cooke Street), and several Honolulu based

nursing facilities. These visits were crucial in order to understand the exact needs for the development of long-term care facilities in Kakaako. Furthermore, I researched what types of long term care options would be the most applicable for the site, as well as what are the operational implications that could significantly influence the design. Subsequently (i.e., after the preferred long-term care type was selected) I paid visits to the Honolulu based nursing facilities in order to clarify the following unknowns:

- 1)The nursing home care management type that offers the best quality of life for the residents.
- 2)Nursing home funding sources in relation to the management type.
- 3)The maintenance and operating cost implications.
- 4)The criteria for defining the optimal number of staff and residents in nursing facilities.
- 5)The existing nursing facility models of operation in Honolulu,
- 6)Programmatic implications (residential, public and service areas).

3. EXTENDED LITERATURE REVIEW

This literature review unifies knowledge gathered from books, research dissertations, journals, and other sources of information published in the field of architecture, urban planning and healthcare.

The literature sources are divided into the following groups of topics:

- 1) The growth of the elderly population in the world and in the US.
- 2) The existing knowledge on Alzheimer's disease in the medical field.
- 3) Alzheimer's non-drug therapy programs.
- 4) Families living with Alzheimer's disease in Hawaii - Kakaako.
- 5) The Kakaako district - Physical Context.
- 6) Architectural implications.

4. THE GROWTH OF THE ELDERLY POPULATION

4.1 Statistical data:

The elderly population in the world is growing. Statistical data and projections published by the well established agencies and institutions, such as the US Census Bureau and the United Nations Population Division, indicate that the world population is rapidly getting older.

The number of the elderly (over the age of 60) in the world is projected to grow from just under 800 million in 2010 (11% of the world population), to just over 2 billion in 2050 (22% of the projected world population)¹. In the hundred years period, from 1950 to 2050, the UN Population Division projected that the world numbers will be as following:

- The total world population will grow 3.7 times,
- The population over the age of 60 will grow nearly 10 times,

1 - David E. Bloom, Axel Boersch-Supan, Patrick McGee, and Atsushi Seike, "Population Aging: Facts, Challenges, and Responses," (Harvard Center for Population and Development Studies, PGDA Working Paper No. 71, May 2011), http://www.hsph.harvard.edu/pgda/WorkingPapers/2011/PGDA_WP_71.pdf (accessed August 20, 2012), 1-2.

- The population over the age of 80 will grow nearly 26 times.²

Modern medical science and technology developments helped to increase the human lifespan. Development of the science and technology in the field of medicine enabled people to increase their lifespan. The anti-aging technologies increased human longevity and prolonged productivity.³ The median age for the world today is 26 years. The country with the youngest population in the world is Yemen (median age 15), and the oldest is Japan (median age 41). By the year 2050, the UN Population Division predicts that the world median age will increase by ten years.⁴

In order to understand elderly population growth implications, it is important to consider the Potential Support Ratio (PSR). The PSR is defined as the number of persons 15-64 years old, per one person 65 years or older.⁵ The PSR indicates the dependency burden that the elderly population places on the potential working force. The current figures show that the world's PSR has a decreasing trend, and that it will continue to decrease. In the 50 years period from 1950 to 2000, the PSR dropped from 12 to 9. By the year 2050, the world's PSR is projected to drop to 4.⁶ These trends can significantly influence social security schemes (pension funds, Medicare, disability benefits, etc.) and at the same time the quality of life (QOL) of the elderly.⁷

The rapidly aging population has already become a serious issue for some developing countries.⁸ In the US this issue is gaining visibility. People 65 years and older presented 12.4% of the US population in the year 2000, but the number increased to 13% in the year 2010, and it is expected to continue to grow up to 19% by 2030 (Figure I and II).⁹ This will create a challenge for our cities and our communities if they don't prepare for a rapidly ageing population in time.

2 - Ibid.

3 - Ibid.

4 - Population Division, DESA, United Nations, *World Population Ageing: 1950-2050*, (New York: United Nations Publications, 2001), <http://www.un.org/esa/population/publications/worldageing19502050/> (accessed August 10, 2012), 17.

5 - Ibid., 20-22.

6 - Ibid.

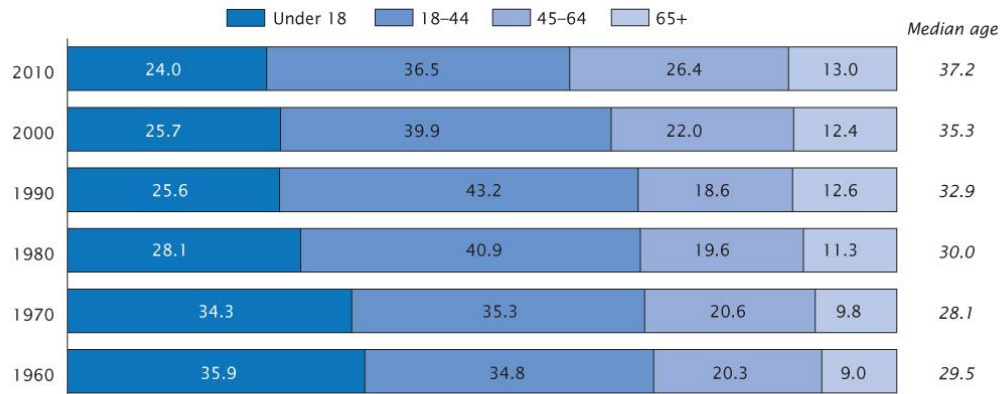
7 - Ibid.

8 - Ibid.

9 - Administration on Aging; "Aging Statistics," http://www.aoa.gov/aoaroot/aging_statistics/index.aspx (accessed August 12, 2012); U.S. Census Bureau; "Age and Sex Composition: 2010," (2010 Census Briefs, Issued May 2011), <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf> (accessed August 10, 2012).

Age Distribution and Median Age: 1960 to 2010

(In percent. For information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/doc/sf1.pdf)

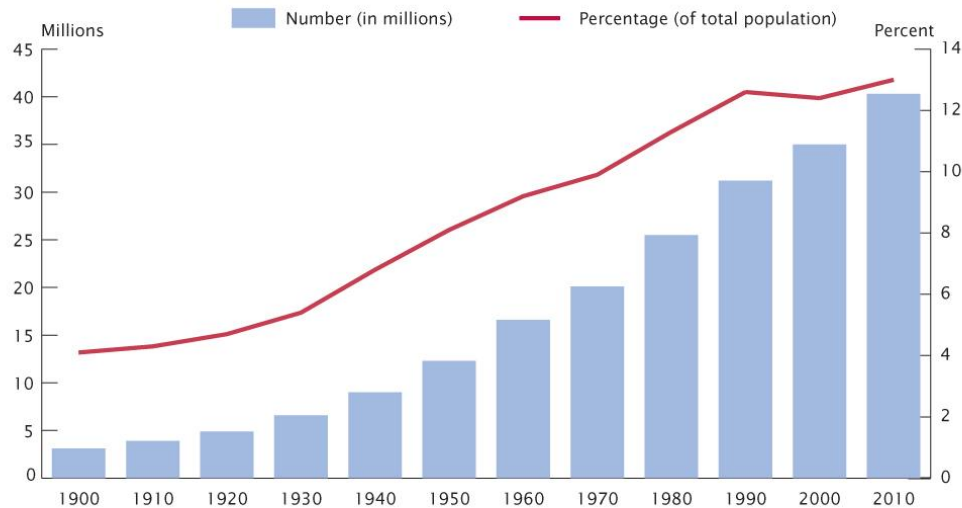


Sources: U.S. Census Bureau, 2010 Census Summary File 1, Census 2000 Summary File 1, 1990 Census Summary File 2C, 1980 Census Summary File 2C, 1970 Census of Population, Vol. 1, Characteristics of the Population, Chapter B, Table 50, and 1960 Census of Population, Vol. 1, Characteristics of the Population, Chapter C, Table 156.

Figure I, source: U.S. Census Bureau; "Age and Sex Composition: 2010," (2010 Census Briefs, Issued May 2011), <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf> (accessed August 10, 2012), 6.

Population 65 Years and Older by Size and Percent of Total Population: 1900 to 2010

(For more information on confidentiality protection, nonsampling error, and definitions, see www.census.gov/prod/cen2010/doc/sf1.pdf)



Sources: U.S. Census Bureau, decennial census of population, 1900 to 2000; 2010 Census Summary File 1.

Figure II, source: U.S. Census Bureau; "The Older Population: 2010," (2010 Census Briefs, Issued November 2011), <http://www.census.gov/prod/cen2010/briefs/c2010br-09.pdf> (accessed August 10, 2012), 3.

4.1.1 Scientists' warnings:

The Institute of Medicine of the National Academies' report for the year 2008 states that the US is not prepared to meet the social and health care needs of its aging population.¹⁰ They observed the problem from several angles. Firstly, the majority of the older population has at least one chronic condition and needs to use medical services far more often than the rest of the population. Secondly, the projections show that new generations of older adults will be more diverse than ever in the US. Their needs will be much different compared to the needs of previous generations, due to:

- racial, ethnic and educational diversities of the elderly,
- the lack of informal caregivers (widely dispersed families, fewer children, higher divorce rates, etc.),
- the multigenerational phenomenon among the elderly (e.g., differences among the elderly 65 years and over, compared to individuals 85 years and over).

Thirdly, the US has a shortage of all types of health care workers, especially in the areas of long-term care settings (crucial for the elderly population). The Institute of Medicine of the National Academies finds that the existing health care workers are inadequately trained to provide the needed care to the older population. And finally, the researchers projected the failure of the Medicare and Medicaid due to depletion of funds by 2019.¹¹

All these issues require immediate responses. However, no adequate responses are presently deployed, and far more importantly, the response plans for the near to mid-far future are inadequate.

4.2 The universal concerns of the elderly

Aging is a process that brings slow and gradual changes into people's lives. From the first day of birth people age. At the very beginning of the aging process positive changes occur that

10 - Institute of Medicine, *Retooling for an aging America: Building the healthcare workforce*, (Washington, D.C.: The National Academies Press, 2008), 15-32.

11 - Ibid.

provide growth and maturity.¹² During the maturing period people go through subtle changes in their social roles, sensory acuity, physical health and ability.¹³ However, at some point of human lives, aging starts to bring about undesirable changes. The human apparatus starts to deteriorate over time and eventually it programs itself for self-destruction. Today, the self-destruction sequence of the human life is significantly postponed, thanks to the advances in medical research and rapidly developing new anti-aging technologies. Modern medicine can detect on time, treat and hold under control most diseases that act as the leading causes of death for humans. People can live productive lives even when they are diagnosed with some chronic conditions. This means that the *morbid years* (when people lose their functional independence) are condensed into a shorter period of human lives.¹⁴

In general, the concerns of the elderly can be divided into specific and universal ones. Specific concerns depend on the cultural, political, social, geographical and demographical circumstances. Universal concerns of the elderly are similar all over the world, and can be categorized as follows:¹⁵

- **Loss of income** (retirement plans, personal savings, health insurance)
- **Loss of status** (sense of uselessness)
- **Loss of mobility** (reduction of agility, strength and muscular control)
- **Social losses** (separation of children and loss of spouse, friends and peers)
- **Healthcare needs** (chronic conditions)
- **Changed perception of the environment** (starts with sensory losses)

This thesis is mostly concerned with elderly that suffer from dementia, in particular Alzheimer's disease. Elderly Alzheimer's patients inevitably experience all six of the conditions listed above. In addition, they also experience effects specific to their illness.

12 - Diane Y. Carstens, *Site planning and design for the elderly : issues, guidelines, and alternatives*. (New York: Van Nostrand Reinhold Company, 1985), 10.

13 - Ibid.

14 - David E. Bloom, Axel Boersch-Supan, Patrick McGee, and Atsushi Seike, "Population Aging: Facts, Challenges, and Responses," (Harvard Center for Population and Development Studies, PGDA Working Paper No. 71 , May 2011), http://www.hsph.harvard.edu/pgda/WorkingPapers/2011/PGDA_WP_71.pdf (accessed August 20, 2012), 1-2.

15 - Diane Y. Carstens, *Site planning and design for the elderly : issues, guidelines, and alternatives*. (New York: Van Nostrand Reinhold Company, 1985), 11-14

4.3 Specific concerns of elderly with Alzheimer's or other dementia:

“‘Dementia’ is an umbrella term describing a variety of diseases and conditions that develop when nerve cells in the brain die or no longer function normally.”¹⁶ There are several types of dementia: Alzheimer's disease, Vascular dementia, Dementia with Lewy bodies (DLB), Mixed dementia, Parkinson's disease, Frontotemporal lobar degeneration (FTLD), Creutzfeldt-Jakob disease, Normal pressure hydrocephalus.¹⁷

According to the Alzheimer's Association (international voluntary health organization situated in the US), in order for patients to be clinically diagnosed with dementia, they have to satisfy the criteria given in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV). The DSM-IV criteria for dementia require that the patient's symptoms include the decline in memory and a decline in at least one of the following:¹⁸

- 1) ability to understand and generate coherent speech,
- 2) ability to recognize or identify objects,
- 3) ability to perform motor activities, or
- 4) ability to perform abstract thinking, make sound judgments, plan and complete complex tasks.

The most common type of dementia is Alzheimer's disease. Medical statistics show that one in eight elderly individuals (65 years and over) has Alzheimer's disease in the US. Furthermore, Alzheimer's disease is the sixth leading cause of death in the US.¹⁹ (Figures III and IV)

Individuals afflicted with Alzheimer's disease and other types of dementia are very dependent on their caregivers. Usually one of the family members becomes the prime caregiver, while other family members create a circle of support. Statistics show that over 15 million

16 - Alzheimer's Association; “2012 Alzheimer's disease facts and figures,” *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 5-6 (hereafter cited as AA. 2012 Report).

17 - Ibid.

18 - Ibid.

19 - Ibid., 14-21

Americans are providing informal care for a person with Alzheimer's or other type of dementia.²⁰ Figures V and VI show that families that provide informal care for individuals afflicted with Alzheimer's disease, are much more engaged in providing overall long-term care (especially the help related to the basic Activities of Daily Living (ADLs)), compared to the caregivers of older people with other chronic conditions. However, as daunting as these statistics are, they cannot even begin to describe the physical and emotional drain that these families experience. The difficulties and needs of a person afflicted with Alzheimer's disease easily become difficulties and needs of the whole supporting family.

Scientists typically divide stages of the Alzheimer's disease symptoms into three groups that roughly determine the level of care needed by Alzheimer's patients:²¹

1. **Early stage** - Can begin to develop 20 years or more before the diagnosis. Patients are still operational on their own. Most commonly, one of the first symptoms is that they experience problems with ability to remember recent information.
2. **Moderate stage** - Can generally last from 2 to 10 years. Patients need help and supervision during the day. In this stage individual's cognitive and functional abilities continuously decline.
3. **Severe stage** - Can last from 1 to 5 years. Patients need around-the-clock care. Also, they lose their ability to communicate, to recognize loved ones and they finally become bed-bounded. Ultimately, patients who end up being bed-bounded become prone to all sorts of infections. Most commonly they get pneumonia, which ultimately becomes fatal.

20 - Ibid., 27-37.

21 - Ibid., 7-12.;

Alzheimer's Association; "Inside the Brain: An Interactive Tour," http://www.alz.org/alzheimers_disease_4719.asp (accessed September 10, 2012)

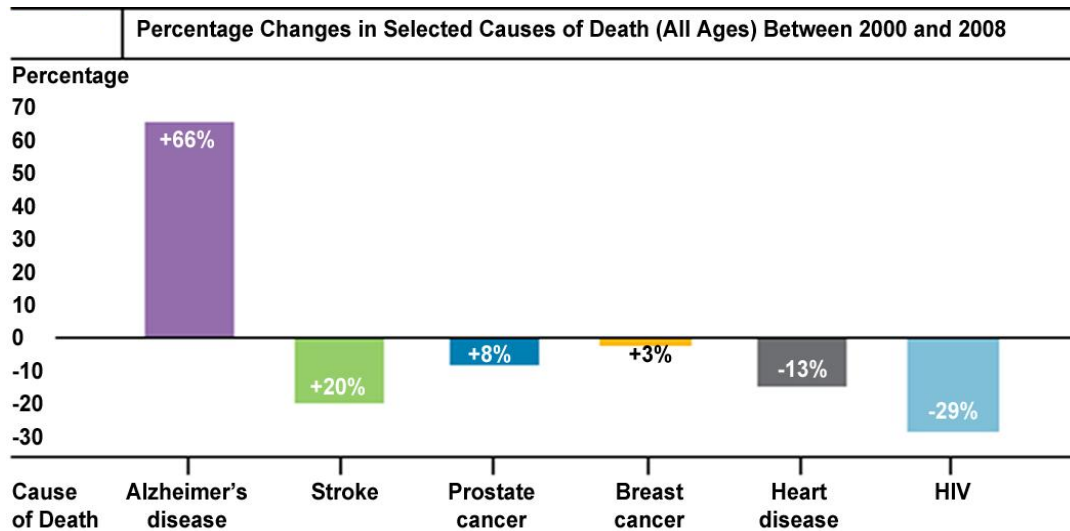


Figure III, source: Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012).

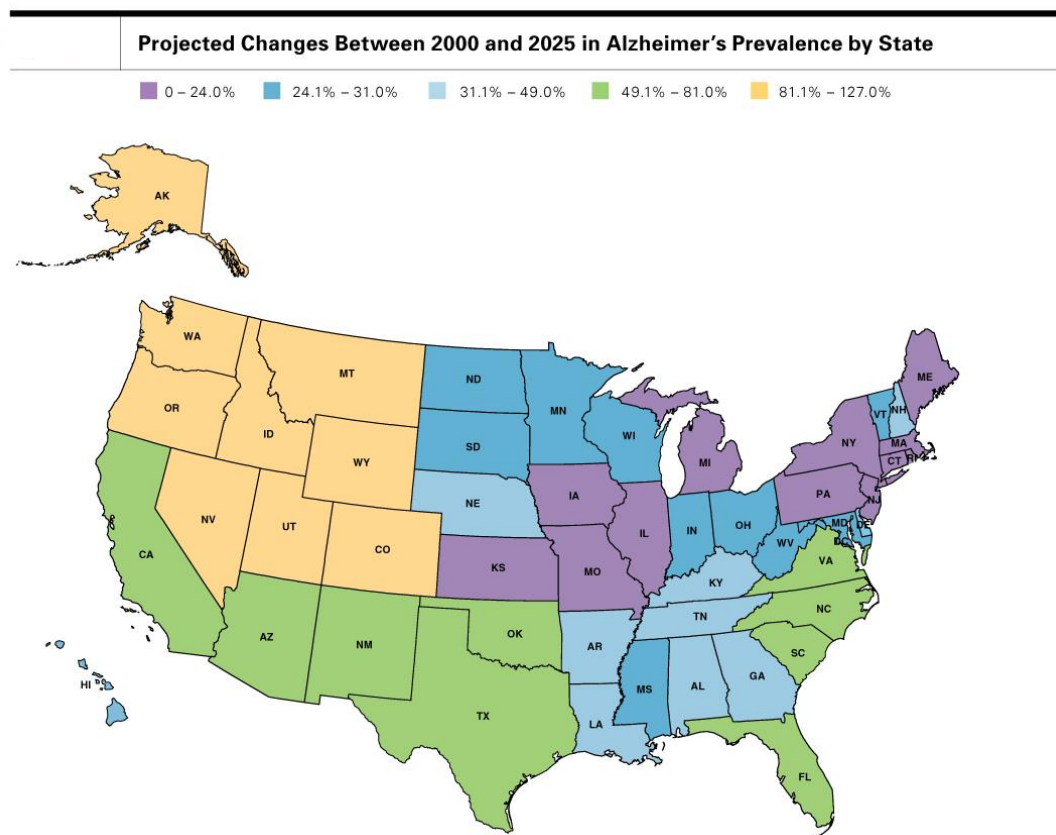


Figure IV, source: Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012).

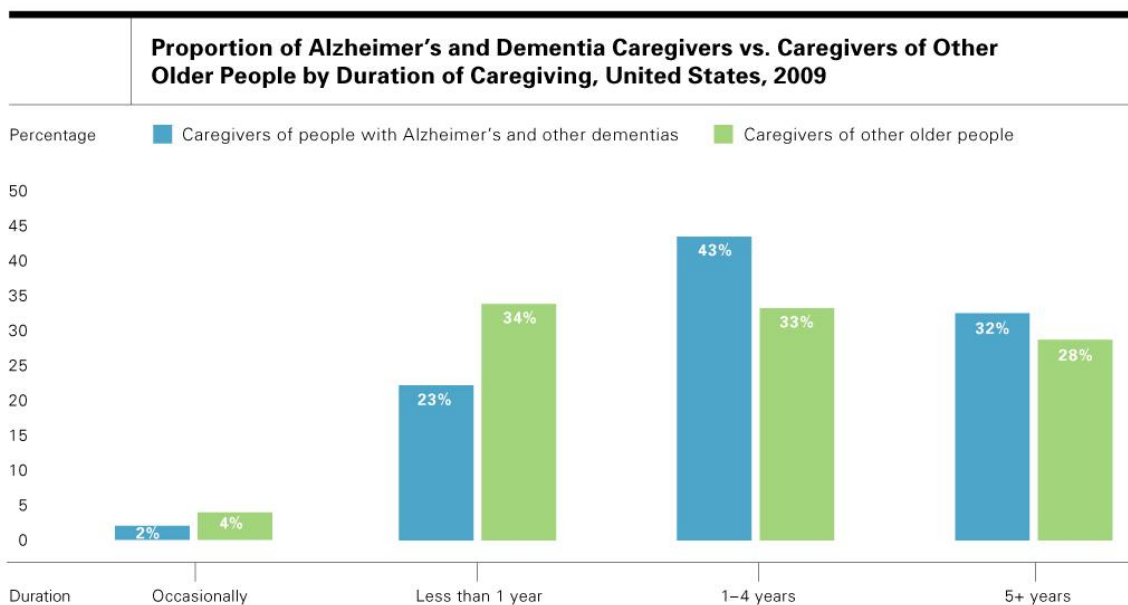


Figure V, source: Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012).

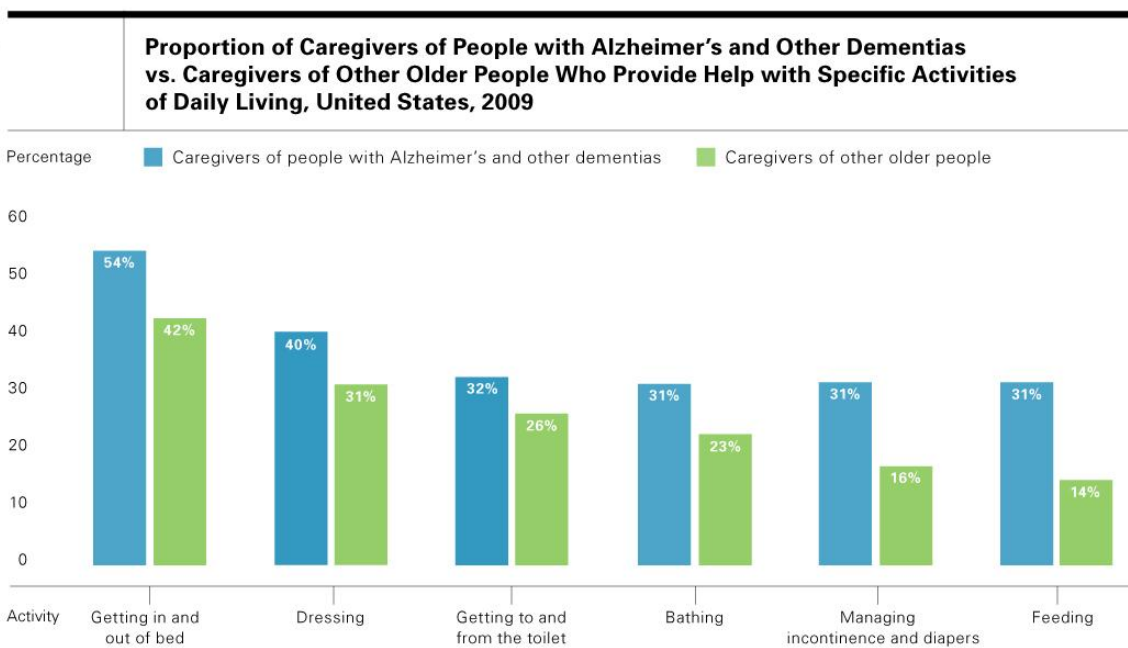


Figure VI, source: Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012).

5. ALZHEIMER'S DISEASE: MEDICAL AND SOCIAL IMPLICATIONS

5.1 Facts about Alzheimer's

As noted earlier, Alzheimer's disease causes irreversible changes in memory functions of a human brain, that slowly progress over time and become more severe, culminating in the malfunction or death of brain cells (neurons).

The medical science knows a lot about Alzheimer's disease today, but still not enough. The first and most important fact is that there is no cure for Alzheimer's disease, or other types of dementia. There are medical treatments, such as: medications that slow down memory loss, treatments for behavioral changes, treatments for sleep changes, and various alternative treatments.¹ However, some of these therapies can cause serious side effects that can even worsen the patient's condition.²

Secondly, the actual cause of the malfunction of neurons due to Alzheimer's disease, or other dementia, is still unknown. Scientists believe that there is a wide spectrum of factors that influence the development of this disease. However, brain changes that involve deposits of the protein fragment beta-amyloid (plaques) and twisted strands of the protein tau (tangles) in and around neurons seem to be the most viable factors for the development of Alzheimer's disease.³ These changes, most probably, cause the death of neurons, and significant brain shrinkage over time that leads to impairment of almost all brain functions.⁴

Thirdly, one of the biggest challenges for clinicians in developing diagnoses for Alzheimer's disease in its early stages is the lack of definite diagnostic markers.⁵ Therefore clinicians have to perform various analyses and examinations in order to develop a diagnostic impression of

1 - Alzheimer's Association ; "Treatments for Alzheimer's disease," (Alzheimer's & Dementia, 2012) http://www.alz.org/alzheimers_disease_treatments.asp (accessed October 20, 2012)

2 - Alzheimer's Association; " Treatments for Behavior," (Treatments for Alzheimer's disease, 2012) http://www.alz.org/alzheimers_disease_treatments_for_behavior.asp (accessed October 20, 2012)

3- Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 5-12. (hereafter cited as AA. 2012 Report).

4 - Alzheimer's Association; "Inside the Brain: An Interactive Tour," (Alzheimer's Disease, 2012) http://www.alz.org/alzheimers_disease_4719.asp (accessed September 10, 2012), 8.

5 - Robert B. Santulli, *The Alzheimer's family: Helping caregivers cope*, (New York : W.W. Norton & Company, 2011), 21-30.

Alzheimer's disease that is only about 90% accurate. The diagnostic criteria are vague when determining whether the older individual has a mild cognitive impairment (MCI), some other cause of memory loss, or simply a normal change in memory caused by aging. For instance, when diagnosing a patient with Alzheimer's disease, clinicians have to make sure that the cognitive difficulties do not come as a result of exposure to emotional, psychological and physical stressors, or usage of some medications, alcohol or other substances.⁶

Furthermore, age seems to play an important role in the development of dementia, but the exact nature of the connection is not clear. However, today scientists claim that Alzheimer's starts to develop in a person's brain approximately 20 years prior to the possible detection.⁷ Many studies show that most people with Alzheimer's are diagnosed after the age 65. These people have the so-called "late-onset" of Alzheimer's. There is a number of cases where Alzheimer's is detected before a person turns 65, i.e., a smaller number of "younger-onset" of Alzheimer's disease.⁸

Risk factors:

There are many risk factors associated with Alzheimer's. Age certainly seems to be the largest one. Statistics show that the incidence of the disease increases with age. For people over 65, the incidence of the disease doubles for every additional five years.⁹ Also, various researches have shown that genetic factors carry some risk for development of Alzheimer's disease and other types of dementia. For instance, a person with first-degree relatives with Alzheimer's, has an increased chances of developing the disease. Furthermore, the presence of a gene known as the apolipoprotein E gene, allele E4 (APOE-e4) presents a significant risk. However, it is not certain how the presence of APOE-e4 truly contributes to the development of dementia, nor

6 - Ibid.

7 - AA. 2012 Report , 8-9.

8 - National Institute on Aging; "Alzheimer's Disease Genetics Fact Sheet," (Alzheimer's Disease Education and Referral Center, 2011) <http://www.nia.nih.gov/alzheimers/publication/alzheimers-disease-genetics-fact-sheet> (accessed September 10, 2012)

9 - Robert B. Santulli, *The Alzheimer's family: Helping caregivers cope*, (New York : W.W. Norton & Company, 2011), 36. (hereafter cited as Santulli. *The Alzheimer's family*).

whether its presence guarantees onset of the disease. Because of this uncertainty, clinicians generally do not recommend tests for this genotype.¹⁰

There are studies that allude to the connection between cardiovascular risk factors and Alzheimer's disease risk factors. These studies show that all recommendations and medications designed to improve cardiovascular conditions can decrease the risk of Alzheimer's disease. Therefore, lowering blood pressure with the right diet, or exercising regularly, can improve the overall health and diminish the risk of Alzheimer's.¹¹

Some studies show that people who are socially engaged, with many satisfying social connections, have a lower risk of developing Alzheimer's disease. Furthermore, various researches also examined the connection of the education level with development of Alzheimer's disease. Scientists believe that people with higher levels of education are in the lower-risk group for developing Alzheimer's disease. They believe that the higher level of education provides a "cognitive reserve" that can help coping with the changes in the brain without an observable deficiency in cognition.¹²

Appropriate activities for individuals afflicted with Alzheimer's disease:

Clinicians recommend that afflicted individuals and their family caregivers remain active as long as possible. This is important for the health of both individuals with Alzheimer's and their family members. The activities should be suitable for the condition of the afflicted individual, and ideally provide physical and mental engagement. Activities recommended for the later stages of the disease are: going for a walk, riding in a car, enjoying a visit of children, enjoying pets, doing a simple gardening task, etc. At least one activity per day is recommended, in addition to the regular chores and routines.¹³

10 - Ibid., 36-39.

11 - Ibid.

12 - Ibid;

Catherine M. Roe et al. " Education and Alzheimer disease without dementia: Support for the cognitive reserve hypothesis," *Neurology* Vol. 68, No. 3 223-228. (2007) <http://www.neurology.org/content/68/3/223.short> (accessed October 1, 2012)

13 - Santulli. *The Alzheimer's family*, 101-107.

Summary:

Anybody can get Alzheimer's disease. Scientists are still trying to find the real cause and the cure for it. The disease is so prevalent, and at the same time so mysterious that clinicians can't even give the diagnosis with 100% accuracy during the patient's life. An autopsy is the only 100% accurate test that can confirm a diagnosis of Alzheimer's disease.¹⁴

While this field of science progresses very slow, there are various types of help available to individuals afflicted with Alzheimer's and to their family caregivers. The following chapters cover available coping and care options.

5.2 The specific needs of the elderly with Alzheimer's disease

Estimates show that there are roughly 5.4 million Americans with Alzheimer's disease today. Out of that number, 5.2 million are people who have the late-onset of Alzheimer's (65 years old and over), and 200,000 people who have the younger-onset of Alzheimer's (under age 65).¹⁵ Studies have shown that patients with diagnosed Alzheimer's disease usually have seven to ten years of life remaining. Infections, such as pneumonia or sepsis, are the typical causes of death for Alzheimer's patients.¹⁶

Scientists have determined three main stages of Alzheimer's disease. These are: mild/early, moderate/mid and severe stage.¹⁷ The symptoms and the needs of the afflicted people are different for these stages.

The mild/early stage of Alzheimer's is, as the name indicates, the early period of the disease's progression. In this period afflicted people are still independent and can perform regular daily routines such as driving, going to work, socializing, etc.¹⁸ The early stage of Alzheimer's can

14 - The Dana Foundation; "Alzheimer's Disease - The Dana Guide," (Richard Mayeux, March 2007).

<http://www.dana.org/news/brainhealth/detail.aspx?id=9764> (accessed October 1, 2012)

15 - Alzheimer's Association, "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 14. (hereafter cited as AA. 2012 Report).

16 - Carolyn W. Zhu and Mary Sano, "Economic considerations in the management of Alzheimer's disease," *Dove Press*, v.1(2), June 2006, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695165/> (accessed October 10, 2012)

17 - AA. 2012 Report, 8.

18 - Alzheimer's Association; "Early-Stage Caregiving," (Stages and Behaviors, 2012) <http://www.alz.org/care/alzheimers-early-mild-stage-caregiving.asp> (accessed September 10, 2012) (hereafter cited as AA. Early-Stage Caregiving).

last for years. The symptoms may not appear to be obvious.¹⁹ Today, scientists claim that even before the symptoms can be detected, plaques and tangles (which are believed to be the most probable cause of the neurons' malfunction) begin to settle in the brain areas that control memory, learning, thinking and planning abilities.²⁰ Therefore, the afflicted person might need guidance with: keeping appointments, remembering words or names, recalling familiar places, managing money, keeping track of medications, planning and organizing, and other instrumental activities of daily living (IADLs). Every individual afflicted with Alzheimer's disease shows a different variation of symptoms, and therefore has different needs. However, all afflicted people in the early stage of Alzheimer's primarily need emotional support. At this stage a patient deals with his fears, frustrations, and even depression from facing the newly diagnosed condition. He may feel embarrassed or isolated from society. Therefore, the afflicted individual needs encouragement to stay actively involved in his normal daily routines.²¹

In the early stage of Alzheimer's, a caregiver (partner, or a family member) needs to provide the encouragement and emotional support to the afflicted individual. However, the caregiver at the same time faces his own fears and frustrations for losing a loved one. Among other things, caregivers are frightened that the coming changes may as well bring a huge financial uncertainty to the family. Therefore, the Alzheimer's Association recommends planning in advance. There are many legal, financial and care plan issues to be discussed and implemented in a timely manner.²² For instance, there are many medical facility options to consider. Actions that need to take place in order for a person to eventually get admitted into a desired facility take a long time. These actions include: facility selection, financial arrangements, wait-listing and admission. Therefore, the caregiver has to stay calm and focused in order to

19 - Ibid.

20 - Alzheimer's Association; "Inside the Brain: An Interactive Tour," (Alzheimer's Disease, 2012) http://www.alz.org/alzheimers_disease_4719.asp (accessed September 10, 2012), 10.

21 - AA. Early-Stage Caregiving

22 - Ibid.

provide adequate help. This is hard, and caregivers often seek emotional support and professional help themselves in these situations.²³

The moderate/mid stage (typically the longest) is the period when the brain becomes seriously damaged. The afflicted person loses independence and needs constant supervision.²⁴ In this period, it becomes very dangerous for the afflicted person to stay alone. The crucial part of care is a prevention from wandering. Safe-proofing the living environment also plays an important role.²⁵ People afflicted with Alzheimer's, who used to live alone can't afford it any longer. They have to move in with their relatives or get admitted into a residential care facility.²⁶

The afflicted person in the mid-stage of the disease needs assistance with personal care tasks, also known as Activities of Daily Living (ADLs) (for instance dressing, getting up, eating, etc.), and Instrumental Activities of Daily Living (IADLs) (for instance shopping, driving, managing finances, etc.). Also, a person in the moderate stage of the disease typically experiences: increasing loss of memory, confusion, difficulty recognizing friends and family, loss of impulse control, mood or behavioral problems, etc.²⁷ Furthermore, speaking and understanding become very challenging for the afflicted individual. Not being able to communicate their needs might cause them to manifest anger, aggression, irritation, and anxiety. Sleep disorders, mood changes, hallucinations and depression can also develop in some patients. All these changes in behavior become very hard for family caregivers.²⁸

The caregivers have a demanding role in this phase. In addition to encouragement and emotional support, which were crucial for the early stage, now the afflicted individual needs more physical help on a daily basis. New circumstances demand all sorts of adjustments from both the caregiver and the person afflicted with Alzheimer's disease. For instance, privacy gets breached

23 - Ibid.

24 - Alzheimer's Association; " Middle-Stage Caregiving," (Stages and Behaviors, 2012)
<http://www.alz.org/care/alzheimers-mid-moderate-stage-caregiving.asp> (accessed September 10, 2012)
(hereafter cited as AA. Middle-Stage Caregiving).

25 - AA. Middle-Stage Caregiving

26 - Santulli. *The Alzheimer's family*, 54.

27 - Ibid.

28 - AA. Middle-Stage Caregiving

while providing help with ADLs (e.g., bathing, dressing, etc.).²⁹ Also, the caregiver's home has to be adapted in order to provide a safe living environment for the afflicted individual. Caregivers in a home environment have to constantly stay alert in order not to overlook something that might pose a potential danger for the person with Alzheimer's.³⁰ All these changes create huge emotional, physical and financial strains that can seriously endanger the caregiver's health. It is in this stage that many caregivers consider to pay for additional home assistance or to institutionalize their loved ones.³¹

On September 14, 2012, this author paid a personal visit to the Alzheimer's Association - Honolulu Chapter. This visit revealed that the Alzheimer's Association provides information to family caregivers about how to recognize the right moment to put their loved one into a professional facility. According to the Alzheimer's Association, there are three valid indicators of the right time to consider institutionalization of the person with Alzheimer's disease:

1. when the safety of the person with Alzheimer's is compromised,
2. when the health of both, the caregiver and the person with Alzheimer's is jeopardized,
3. and when the needs of the person with Alzheimer's exceed the current home treatment capacities.

However, institutionalization is just the beginning of a new chapter of life for both caregivers and individuals with Alzheimer's disease. The emotional pain, and feelings of failure and guilty are common for caregivers. The Alzheimer's Association recommends that family caregivers in this period ask for support from other family members, friends, as well as from professionals (therapists, facilitated support groups, church, etc.).³²

29 - Ibid.

30 - Alzheimer's Association; "Home Safety and Alzheimer's," (Top Safety Concerns, 2012)
<http://www.alz.org/care/alzheimers-dementia-home-safety.asp> (accessed September 10, 2012)

31 - Santulli. *The Alzheimer's family*, 54.

32 - AA. Middle-Stage Caregiving

The severe stage is unpredictable in terms of the speed of its progression. It can last from several weeks to several years. As the name says, it is the most demanding phase of Alzheimer's disease. The afflicted individual requires intensive supervision 24-hours a day.³³

People in the severe stage of Alzheimer's disease typically:³⁴

- lose the ability to speak,
- lose the ability to recognize familiar people,
- have difficulties with eating and swallowing,
- need help with walking and eventually become unable to walk,
- need around-the-clock help with ADLs,
- lose the ability to control bladder, have problems with constipation, and
- become prone to infections (skin infections, pneumonia, etc.).

During the late stage of Alzheimer's, the main role of the family caregiver is to make sure that the individual's quality of life and dignity are not jeopardized in the process of care giving. This is actually the most challenging part, because the afflicted individual is not able to communicate his needs and feelings. Research performed with individuals in the severe stage revealed that some parts of the person's self-awareness still may remain. Therefore, the Alzheimer's Association recommends that caregivers mind the individual's emotional well-being and continue to frequently enable them to: listen to favorite music or favorite book chapters, watch old photos, brush their hair, etc.³⁵

In this period, if not earlier, family caregivers will most probably end up institutionalizing their loved ones. Because the individual's needs are now much more demanding and life-threatening, the possible choices of facilities that can admit them are limited. It is not unusual that these patients get admitted directly to a hospice house due to their fragile health conditions.³⁶

33 - Alzheimer's Association; "Late-Stage Caregiving," (Stages and Behaviors, 2012) <http://www.alz.org/care/alzheimers-late-end-stage-caregiving.asp> (accessed September 10, 2012) (hereafter cited as AA. Late-Stage Caregiving).

34 - Ibid;

Santulli. *The Alzheimer's family*, 186.

35 - AA. Late-Stage Caregiving

36 - Ibid.

5.3 The needs of family caregivers

The 2012 Alzheimer's disease Facts and Figures Report, prepared by the Alzheimer's Association, indicates that over 15 million Americans provide home care services for people with Alzheimer's disease.³⁷ In addition to that, it is estimated that nearly 80% of the home care provided to the elderly Americans is delivered solely by family members, and a little less than 10% solely by paid care workers. Overall, it is estimated that over 90% of any type of home care is provided by family caregivers.³⁸

To assume a caregiver's role for the person with Alzheimer's disease presents a huge burden to family members or friends. Caregiving can affect the informal caregivers physically, emotionally, socially and financially.³⁹ The specific needs of a family that provides care for a person with Alzheimer's differ for each individual and grow with each stage of the disease.

Physical strain:

Various surveys performed in the US indicate that the intensity and the duration of the provided homecare, measured in the number of hours per week and the number of caregiving years, are higher for the caregivers of individuals with Alzheimer's disease (or any other type of dementia), compared to the caregivers of older individuals with some other chronic condition.⁴⁰ The MetLife Mature Market Institute's study of Alzheimer's disease caregivers, performed in 2006, found that Alzheimer's caregivers provided an average of 47 hours of homecare per week.⁴¹ Dispersed among seven days in a week, an average of nearly 7 hours of homecare per day is what each individual afflicted with Alzheimer's disease received. This number of hours exceeds the number of hours of a full-time employed person. However, we need to bear in mind that the 47 hours per week is an average number and that some caregivers put in a lot more hours, especially in the latter stages of Alzheimer's disease. The MetLife Mature Market Institute's

37 - AA. 2012 Report , 27-37.

38 - Committee on the Future Health Care Workforce for Older Americans, Institute of Medicine, *Retooling for an aging America: Building the health care workforce* (Washington, D.C.: The National Academies Press, 2008), 247.

39 - AA. 2012 Report , 27-37.

40 - Ibid.

41 - MetLife Mature Market Institute; "The MetLife Study of Alzheimer's Disease: The Caregiving Experience," (MetLife, 2006), <https://www.metlife.com/assets/cao/mmi/publications/studies/mmi-alzheimers-disease-caregiving-experience-study.pdf> (accessed September 19, 2012.), 5.

study report has to be taken with some reserve, because the surveyed sample included only families who were receiving long-term care insurance benefits. The interviewed families claimed that the benefits of a long-term care insurance enabled them to spend more quality time with their loved ones instead of just covering the basic needs.⁴²

Richard Schulz et al. in the article "End-of-Life Care and the Effects of Bereavement on Family Caregivers of Persons with Dementia" (2003), provide the statistical survey results obtained from a wider sample. According to this article, 59% of caregivers involved in providing help during the final years of the patient's life, testified that they felt as if they were engaged in helping 24 hours a day. Also, from the same source, 90% of the family caregivers reported that they believed that death came as a relief to the patient, while 72% reported that they experienced relief themselves when the individual with Alzheimer's disease passed away.⁴³

In terms of the length of providing long-term care measured in the number of years, the families with Alzheimer's are again outpacing families caring for the elderly with some other chronic condition. The numbers say that the 43% of the families with a loved one afflicted with Alzheimer's had been caring for them from one to four years, and 32% for five years or longer. Family caregivers of older individuals with some other chronic condition have been less engaged in long-term caregiving.⁴⁴

Caregivers of individuals afflicted with Alzheimer's provide help with various activities, including:⁴⁵

- instrumental activities of daily living (IADLs): shopping for groceries, providing transportation, taking medications, managing finances, etc.
- personal activities of daily living (ADL), such as: bathing, dressing, grooming, feeding, etc.
- supervising the person (safety issues)
- finding and using supporting services: assisted living facilities, nursing homes, etc.

42 - Ibid., 11.

43 - Richard Schulz et al., "End-of-Life Care and the Effects of Bereavement on Family Caregivers of Persons with Dementia," *The New England journal of medicine* Vol. 349, No. 20, (2003)

44 - AA. 2012 Report , 27-37.

45 - Ibid.

- hiring and supervising home-care providers
- performing household chores

The vast majority of family caregivers help afflicted individuals with getting out of bed, using the restroom, feeding, bathing, and other ADLs.⁴⁶

Emotional strain:

In numerous literature sources, family caregivers are also called "the invisible second patients".⁴⁷ Many studies are performed, and large number of caregivers reported that they have developed some sort of a chronic health condition caused by their caregiving roles.⁴⁸ This happens because family caregivers often neglect themselves in the process of caregiving. Daily juggles between professional obligations, home duties and caregiving responsibilities, present challenges to all family members involved. The lack of sleep, rest and personal time forces caregivers to develop unhealthy habits.⁴⁹ Also, a large contributor to the development of unhealthy life habits and possible chronic conditions is the high emotional stress that many caregivers report to experience.⁵⁰

The study performed by the Alzheimer's Association, in the year 2010, shows that 61% of Alzheimer's caregivers reported their emotional stress of caregiving to be in a range from high to very high. Furthermore, the 2009 Behavioral Risk Factor Surveillance System (BRFSS) survey for caregivers, conducted in Illinois, Louisiana, Ohio and the District of Columbia, shows that 36.5% of Alzheimer's and dementia caregivers rated stress to be the greatest difficulty they faced.⁵¹

There are many objective factors that can cause emotional stress for Alzheimer's caregivers. According to the Pearlin's et al. paper, *Caregiving and the stress process: an overview of concepts and their measures*, published in 1990, all caregivers' stress factors can be divided into four main areas:

46 - Ibid.

47 - Ibid.;

Henry Brodaty and Marika Donkin, "Family caregivers of people with dementia," *Dialogues in Clinical Neuroscience Studies* Vol. 11, No. 2 (2009) <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc3181916/> (accessed September 15, 2012)

48 - AA. 2012 Report , 27-37.

49 - Santulli. *The Alzheimer's family*, 161-170 .

50 - AA. 2012 Report , 27-37.

51 - Ibid.

1. the background context (e.g., the caregiver's family support level, or the impact of other life circumstances),
2. the primary stressors (e.g., the level of help that afflicted person requires and his behavioral characteristics),
3. the secondary role strains (e.g., primary caregiver's feeling of social isolation or family conflicts as a result of a long-term caregiving), and
4. the intrapsychic strains (e.g., caregiver's personality and competence in a role of a caregiver, etc.)⁵²

Robert B. Santulli, MD, a geriatric psychiatrist and director at the Dartmouth memory clinic, in his book *The Alzheimer's family: Helping caregivers cope* (published in 2011), explains that the causes of caregivers' stress are myriad. But, he emphasizes four major ones:⁵³

1. grief over the gradual loss of a loved one,
2. "the 36-hour day" (in other words, the feeling of exhaustion from non-stop caregiving),
3. poor premorbid relationships between caregivers and afflicted individual, and
4. stress from mood and behavioral symptoms.

Dr. Santulli expands on all these named stress causes, but he emphasizes that the grief over the gradual loss of a family member is the most significant stress for all caregivers. Likewise, it is the most important factor that clinicians have to address when they meet with the patients' families. Usually, family caregivers experience years of anticipatory grief. Grief continues even after a family member passes away. Dr. Santulli warns that it is always an alerting sign if a family member doesn't not experience genuine sadness at the time of death of a loved one. It is almost certain that he/she may be susceptible to a serious delayed grief reaction. In order to prevent serious psychological conditions, counseling (or a therapy) is recommended to all caregivers.⁵⁴

52 - Leonard I. Pearlin, Joseph T. Mullan, Shirley J. Semple, Marilyn M. Skaff, "Caregiving and the stress process: an overview of concepts and their measures," *Gerontologist* Vol.30, Issue 5 (1990);

Henry Brodaty and Marika Donkin, "Family caregivers of people with dementia," *Dialogues in Clinical Neuroscience Studies* Vol. 11, No. 2 (2009) <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc3181916/> (accessed September 15, 2012)

53 - Santulli. *The Alzheimer's family*, 161-170.

54 - Santulli. *The Alzheimer's family*, 186-195.

High levels of long-term emotional stress, heavy physical exhaustion and unhealthy habits, make caregivers prone to the development of various chronic conditions. Most often caregivers develop depression and similar psychological problems. They can also develop some metabolic syndrome conditions (e.g., abdominal obesity, high triglyceride level, high blood pressure, high blood glucose level and low HDL cholesterol level) which might lead to more serious diseases, such as diabetes or heart disease.⁵⁵

Financial strain:

Alzheimer's disease is rated as the third most costly disease in the US. Total annual costs are estimated to be in the range of \$80-100 billion. These numbers include direct, indirect and intangible costs. More precisely, direct costs can be divided into medical care costs (e.g., nursing homes, physicians visits, etc.) and nonmedical care costs (e.g., adult daycare, respite care, etc.). Indirect costs are expenses related to estimated time of informal care provided by family caregivers, patient's and caregiver's loss of productivity due to the illness, and similar losses. And finally, intangible costs relate to the decay of the qualities of patients' and caregivers' lives.⁵⁶

Additionally, Alzheimer's disease costs vary depending on the patient's stage and condition. In the early stage family caregivers provide most of the care themselves (approximately 60%-70%), hence direct costs are low. However, three-fourths of the total costs for Alzheimer's patients and families occur during the severe stage, when the patient gets institutionalized.⁵⁷

To illustrate the level of indirect costs, the 2010 Alzheimer's Association survey reveals the statistics for working caregivers. According to this survey, 44% of all Alzheimer's family caregivers report holding a full-time or a part-time job. However, those who are employed, experience serious work disturbances due to their caregiving roles. Sixty five percent of working Alzheimer's caregivers come to work late or leave early, 20% take a leave of absence, 13% shift from working full time to working part time, 11% quit working entirely. Other work-related

55 - AA. 2012 Report , 27-37.;

The National Heart, Lung, and Blood Institute; "What Is Metabolic Syndrome?" (Explore Metabolic Syndrome, 2011) <http://www.nhlbi.nih.gov/health/health-topics/topics/ms/> (accessed September 15, 2012)

56 - Carolyn W. Zhu and Mary Sano, "Economic considerations in the management of Alzheimer's disease," *Dove Press*, v.1(2), June 2006, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695165/> (accessed October 10, 2012)

57 - Ibid.

disturbances include: turning down a promotion, taking a less demanding job, losing job benefits, experiencing a work performance decline, and choosing early retirement.⁵⁸ These statistics illuminate the obvious financial struggle and related emotional strain that caregiving families experience. A survey performed by the MetLife Mature Market Institute in 2006, compared the job disturbance of family members caring for individuals afflicted with Alzheimer's to family caregivers of individuals that have a serious physical disability. The results of this survey indicate that the long-term care insurance benefits exerted a positive influence on a working caregiver's quality of life.⁵⁹

Available long-term care options:

This author visited the Alzheimer's Association - Aloha Chapter, on September 14, 2012. This visit revealed that the Alzheimer's Association provides a list of available options for a long-term care of Alzheimer's patients. Some of the options include: adult residential care homes (ARCH), assisted living facilities (ALF), adult foster care family homes (AFC), and skilled nursing facilities (SNF). The Alzheimer's Association - Aloha Chapter educates family caregivers about how to determine the right facility, suitable for them. The most important two factors, that family caregivers have to take into consideration, are financial and emotional matters. For instance, if there is a lack of financial means, the facility choice is narrowed down to those institutions that accept Medicaid and Medicare. Additional research revealed that on the nationwide level, the most expensive option is provided by private SNFs (roughly \$6,150/month), then semi-private SNFs (roughly \$5,430/month), then in-home care services (roughly \$3,360-5,760/month), then ALFs (roughly \$2,714/month), and finally ARCHs (approximately \$2,200/month).⁶⁰ For many people it presents a difficulty to frequently travel long distances in order to visit their loved one.

58 - AA. 2012 Report , 27-37

59 - MetLife Mature Market Institute; "The MetLife Study of Alzheimer's Disease: The Caregiving Experience," (MetLife, 2006), <https://www.metlife.com/assets/cao/mmi/publications/studies/mmi-alzheimers-disease-caregiving-experience-study.pdf> (accessed September 19, 2012.), 14-15.

60 - A Place for Mom; " Comparing Care Types ," (Elder Care Costs Comparison, 2012), <http://www.aplaceformom.com/senior-care-resources/articles/elder-care-costs> (accessed October 8, 2012); *Ibid.*, " Cost of Care Homes," (Care Homes, 2012), <http://www.aplaceformom.com/care-homes#cost> (accessed October 8, 2012)

Among the emotional matters, the leading decision factor, according to the Alzheimer's Association, is the commuting distance to the care-providing facility.

During the decision process, until a final decision is reached, many families choose the Adult Day Services (ADS), as a transitional option and a well-proven community-based alternative, that can actually help in delaying nursing home placement for people afflicted with any type of dementia. ADS offer a variety of activities and services for the elderly while enabling them to continue living in their homes. ADS most often work only on weekdays, for five or more hours per day. Some centers also offer overnight (respite) stay for the elderly. The costs for ADS are lower than institutional care. The average nationwide cost for ADS is approximately \$2,066 per month.⁶¹

Mixed-use projects: A viable option:

The family role in caregiving for a person with Alzheimer's disease is crucial. Families and patients prefer home care options for as long as possible.⁶² This indicates the need for more and better non-institutional care options. Carolyn W. Zhu and Mary Sano, in their research article *Economic considerations in the management of Alzheimer's disease* (June 2006), concluded that the continued homecare for Alzheimer's patients under pharmacological treatments could reduce the burden of caregiving, healthcare costs, and eventually improve the patients' and caregivers' quality of lives.⁶³ In addition to this, Henry Brodaty and Marika Donkin suggest that: "The management of the person with dementia requires a comprehensive plan that includes a partnership between doctors, health care workers, and families."⁶⁴

Eventual institutionalization of the person with Alzheimer's should not break up the family. It is important for both, caregivers and individuals afflicted with Alzheimer's, to stay together to the very end. On the one hand, caregivers need to properly depart from their loved ones, and on the

61 - The MetLife Mature Market Institute, *Adult Day Services: Providing Support to Individuals and Their Family Caregivers*, (New York: The MetLife Mature Market Institute, 2010), <https://www.metlife.com/assets/cao/mmi/publications/studies/2010/mmi-adult-day-services.pdf> (accessed October 20, 2012), 2-39.

62 - Carolyn W. Zhu and Mary Sano, "Economic considerations in the management of Alzheimer's disease," *Dove Press*, v.1(2), June 2006, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695165/> (accessed October 10, 2012)

63 -Ibid.

64 - Henry Brodaty and Marika Donkin, "Family caregivers of people with dementia," *Dialogues in Clinical Neuroscience Studies* Vol. 11, No. 2 (2009) <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc3181916/> (accessed September 15, 2012)

other hand, there is a chance that the afflicted individuals retain some self-awareness, which enable them to share the last moments with their families.

Furthermore, family caregivers are vulnerable to the development of various chronic conditions, due to their demanding caregiving roles. They are often called "the invisible second patients". Dr. Kore Liow, from the Hawai'i Pacific Neuroscience institute, as a guest speaker on the radio broadcast program *The Body Show* (Hawaii Public Radio, on October 29, 2012), stated that family caregivers, due to their long and high emotional stress, are themselves at risk of developing Alzheimer's disease.⁶⁵

Finally, it is important to say that family caregivers continue to seek professional help even in a period after their loved-one passes away. It is not rare that after the death of the loved-one, family caregivers develop a strong feeling of self-blame that can eventually lead to a pathological state of depression. Clinicians recommend that these caregivers help themselves by sharing their experience with other family caregivers that can benefit from learning about other experiences.⁶⁶

These discoveries suggest that a community-based long term care project would be a suitable answer to the majority of issues that individuals with Alzheimer's and their family caregivers are facing. A mixed-use project, that offers a combination of a nursing facility and a family support center would enable fitted services that would meet the range of Alzheimer's patients' needs.

65 - Kore Liow, interview by Kathleen Kozak, *The Body Show*, HPR, October 29, 2012, <http://www.hawaiipublicradio.org/archive/thebodyshow> (accessed October 30, 2012)

66 - Santulli. *The Alzheimer's family*, 186-195

6. ALZHEIMER'S NON-DRUG THERAPY PROGRAMS

There are many researches investigating the influence of non-drug therapies on the elderly individuals with Alzheimer's disease and other types of dementia. Some of these therapies include art therapy, music therapy, intergenerational programs, etc.

6.1 Art and music therapy:

Activities that include art and music sessions showed to be especially beneficial for individuals with dementia. Alzheimer's Association recommends to family caregivers to conduct art and music sessions even in their home environments. This can help in reducing agitation and improving behavioral issues, even for individuals in mid-to-late stages of Alzheimer's disease.¹

Art therapy was officially accepted as a form of medical treatment back in the 1940s.² Today art therapy is regularly applied in hospitals, clinics, rehabilitation centers, etc. For an individual with Alzheimer's, art can help in the evaluation of the individual's level of cognition as the disease progresses. Art can also serve as a form of communication, when abilities to speak diminish.³ For instance, Jennifer M. Vetter's research studied the potential of art to reduce agitation in an adult male with an advanced stage of Alzheimer's disease. Vetter's conclusions after a total of 18 art sessions with the 86 years old male, who was a resident of a nursing home facility in a locked unit for Alzheimer's care⁴, indicates that significant relaxation and reduced level of agitation were achieved only during and immediately after the subject's participations in art sessions. In particular, those art sessions that helped to reminisce the subject's life were evaluated as most therapeutic. However, the evaluation for the total period of time during this study shows that only a miniscule improvement was achieved in reducing the overall level of patient's agitation. Jennifer M. Vetter describes that one of the facts that could be responsible for the relative failure of her study was that this participant had previous experience in art work. During the therapy sessions she realized that he would feel frustrated because he could not

1 - Alzheimer's Association, "Music, Art and Alzheimer's," <http://www.alz.org/care/alzheimers-dementia-music-art-therapy.asp> (accessed October 30, 2012)

2 - Jennifer M. Vetter, "The Power of Art: Using Art Therapy to Minimize Agitation: A Case Study of an Adult Male With Alzheimer's," (Master of Arts dissertation, Ursuline College Graduate School, 2007), 21.

3 - Ibid.

4 - Ibid., 8-14

produce the aesthetic quality of his art pieces, as he used to when he was healthy. She also believes that this type of work, if conducted with Alzheimer's patients in their earlier stages of the disease, and during longer periods of time, could produce greater success in lowering down their feeling of agitations. She strongly believes that art therapy can help Alzheimer's patients in filling the voids created by their diminishing abilities to communicate, and in reducing their levels of frustration due to the feelings of being misunderstood.⁵

Music as a healing method, or a ritual, existed in some form even in the very early days of mankind. Many descriptions confirm the important role that music had in rituals of shaman healers, or in healing processes (according to the beliefs of Aristotle and Plato).⁶ However, the modern era of music therapy started during World War I, when musicians started visiting Veteran hospitals to provide comfort in the recovery process of many veterans returning from war. Soon afterwards doctors and nurses began hiring musicians to work in hospitals, and from there arose the need for proper education in this new field of medicine. The first music therapy degree program was initiated at the Michigan State University in 1944.⁷

Tiffany Curry, in her Master in Social Work thesis, titled "Music Therapy Program to Decrease Agitation in Individuals with Dementia: A Grant Proposal Project", researched the benefits of music therapy for individuals afflicted with dementia. By reviewing several studies, Tiffany Curry elaborated that various prominent researchers demonstrated how music therapy can be used as a powerful treatment method for decreasing agitation and aggression of dementia patients living at home or in nursing facilities.⁸ Through the research, she identified several potential funding sources for her proposal. The most viable were the Grammy Foundation, the Alzheimer's Association, and the US Administration on Aging. The US Administration on Aging offered the most promising grant opportunity, which aimed to support states and their partners in

5 - Ibid., 74-78

6 - Tiffany Curry, "Music Therapy Program to Decrease Agitation in Individuals With Dementia: A Grant Proposal," (Master of Social Work, California State University, Long Beach, May 2011), 20.

7 - Ibid.;

American Music Therapy Association; "History of Music Therapy," <http://www.musictherapy.org/about/history/> (accessed October 30, 2012)

8 - Tiffany Curry, "Music Therapy Program to Decrease Agitation in Individuals With Dementia: A Grant Proposal," (Master of Social Work, California State University, Long Beach, May 2011), 21-24.

exploring innovative ways of supporting community-based services for families with Alzheimer' disease or other dementia types.⁹

6.2 Intergenerational programs in general:

The first widespread intergenerational program (IGP) in the US, called the Foster Grandparent Program, was established back in 1963. It was created as the opportunity for low-income older individuals, 60 years and over, to provide one-to-one support guidance to children with special and exceptional needs. Since then, IGPs have evolved to cover a wider spectrum of themes that engage the elderly and the youth. Some of these themes deal with stereotypes, cultural differences, changes in family structure, drug use, and violent behavior.¹⁰

The modern way of life has segregated families by generations. The majority of children live without their grandparents and vice versa. Paradoxically, it is exactly the majority of the older generation that has the time, the patience and the good will to work with children and help them to find their place in life.¹¹ The elderly represent a huge unemployed potential that is able to provide guidance, wisdom, tutoring, and positive role models for children of all ages. It is not rare that children involved in IGPs improve their academic performance and start behaving responsively, and more maturely.¹² On the other hand, the benefits for the elderly include: learning new skills and new technologies, improving overall health condition, acquiring new friendships, and improving self-esteem by becoming once again contributing members of the society.¹³

The US Environmental Protection Agency emphasizes benefits of IGPs for the community, the elderly, and the young generations. It says that IGPs deepen community bonds by enabling the elderly and the children to become contributing members of the community by sharing their talents and interests. In IGPs human resources are multiplied by engaging both elderly and young

9 - Ibid., 28-31

10 - Generations United; The Benefits of Intergenerational Programs, <http://www.gu.org/LinkClick.aspx?fileticket=71wHEwUd0KA%3D&tabid=157&mid=606> (accessed October 22, 2012)

11 - Ibid.

12 - Environmental Protection Agency; Benefits of Intergenerational Programs , last updated on Thursday, October 13, 2011, <http://www.epa.gov/aging/ia/benefits.htm> (accessed October 22, 2012)

13 - Generations United; The Benefits of Intergenerational Programs, <http://www.gu.org/LinkClick.aspx?fileticket=71wHEwUd0KA%3D&tabid=157&mid=606> (accessed October 22, 2012)

individuals as contributing program volunteers. Furthermore, IGPs promote the preservation of cultural traditions and values, which are especially significant for Hawaii. They also, most often, energize further communal collaborations that address human needs and various communal issues.¹⁴ As far as the benefits for children are concerned, interactions with older adults can help children to develop their self-esteem, improve language/communication skills, create cross-generational friendships, nurture kindness and appreciate for diversity.¹⁵

Some of the currently existing IGPs in Hawaii are: University of Hawaii's Cooperative Extension System that implements intergenerational initiatives¹⁶, Seagull School at Kapolei (early education, child care, and preschool)¹⁷, Sakura House Adult Day Care Program in Honolulu¹⁸, Kohala Intergenerational Center¹⁹, Maunalani Nursing and Rehabilitation Center²⁰, etc.

6.3 Intergenerational programs for individuals with Alzheimer's:

While intergenerational programs became widely accepted, IGPs for individuals with Alzheimer's, or other types of dementia are still in the research phase.²¹ Jarrott and Bruno believe that the main reasons for this situation lie in the specific characteristics of dementia and in the challenges that dementia presents in terms of finding suitable activities for both the elderly and the children. way that it presents a challenge for activities-professionals to find suitable exercises that would equally involve the older individuals with dementia and the children.²² Jarrott and Bruno postulate that the limited research in this area fostered the unpopularity of these types of

14 - Environmental Protection Agency; Benefits of Intergenerational Programs , last updated on Thursday, October 13, 2011, <http://www.epa.gov/aging/ia/benefits.htm> (accessed October 22, 2012)

15 - Ibid.

16 - University of Hawaii; Intergenerational Programs, <http://www.ctahr.hawaii.edu/maui/Intergenerational.aspx> (accessed October 27, 2012)

17 - Seagull Schools; Seagull Schools - Hawaii Early Education, Hawaii Child Care, and Hawaii Preschool, <http://www.seagullschools.com/> (accessed October 27, 2012)

18 - Sakura House; Intergenerational Program, <http://www.eldercarechannel.com/care-providers/sakura-house-adult-day-care-program/32752> (accessed October 27, 2012)

19 - Partners in Development Foundation, http://www.pidfoundation.org/programs/ka_hana_noeau/officers_directors/dennis_matsuda (accessed October 27, 2012)

20 - Alternatives for Seniors; Maunalani Nursing And Rehabilitation Center, <http://www.alternativesforseniors.com/account/hi/maunalani-nursing-and-rehabilitation-center/32627> (accessed October 27, 2012)

21 - Lauren Giglio, "The Effect of a Music Therapy Intergenerational Program on Cued and Spontaneous Behaviors of Older Adults With Dementia," (B.M. in Music Therapy, Marywood University, 1998), 35.

22 - Shannon E. Jarrott and Kelly Bruno, " Intergenerational activities involving persons with dementia: An observational assessment," *American Journal of Alzheimer's Disease and Other Dementias*, Volume 18, Number 1, January/February 2003, https://secure.hosting.vt.edu/www.intergenerational.claahs.vt.edu/papers/jarrott_bruno_03.pdf (accessed October 25, 2012), 31 (hereafter cited as Jarrott and Bruno. IGPs involving persons with dementia)

IGPs, especially since there is a certain number of noted negative experiences. As one of the negative examples the researchers briefly describe the early research of Carol Seefeldt, "The Effects of Preschoolers' Visits to a Nursing Home", which was published in the *Gerontologist Journal*, in 1987. Seefeldt's study shows that a group of children consisting of four to five years old kids, who have been visiting frail elderly residing in a nursing home during a year long period, developed more negative attitudes toward the elderly and aging, in contrast to a control group of children.²³ The researchers argue that similar negative experiences associated with IGPs could be actually the result of poor planning and/or program execution. Jarrott and Bruno conducted their own research in 2003, in which they studied 48 adults with a diagnosis of dementia, who were enrolled in the ONEgeneration Daycare Program, for an average of 23 months period. The adults were divided into two groups, the treatment and the control group. The treatment group consisted of voluntarily participants who self-initiatively engaged in activities with a diverse group of infants and children up to five years old. After carefully observing and evaluating the behaviors of both groups, Jarrott and Bruno concluded that the treatment group participants experienced more positive effects during the participations in IGPs. They found that the cognitive impairment levels of the adults with dementia did not prohibit their successful participation in IGPs, and they recommend IGPs to be used for other dementia care programs.²⁴

Another research, performed by Michelle M. Lee, Cameron J. Camp, and Megan L. Malone, published in 2007, supports Jarrott's and Bruno's observational research findings. The Lee-Camp-Malone research confirmed that IGPs for the elderly with a diagnosis of dementia can be successfully conducted, if the elderly voluntarily participate in mentoring role program with the children. This research used the Montessori method of educating children, as a base interface for an IGP implemented in a nursing home facility. The participants worked in one-to-one settings, with minimal assistance from the research staff. Treatment sessions usually lasted for 20 minutes, or in other words, for the period of completion of three Montessori-based activities. Montessori-based activities provided tasks that matched the capabilities of both participating

23 - Carol Seefeldt, " The Effects of Preschoolers' Visits to a Nursing Home," *The Gerontologist*, Volume 27, Issue 2, 1987, 228-232.

24 - Jarrott and Bruno. IGPs involving persons with dementia, 31-37

adults with dementia and children. This in turn largely eliminated the triggers of frustration in the dementia afflicted adults. The evaluation made by the researchers confirmed that IGPs using Montessori-based activities as the means of interactions between the individuals with dementia and preschool children can be successful. This type of program induced more constructive participation and fewer moments of isolation, or passive engagement of the elderly with dementia, compared to the regular activities and programs.²⁵

6.4 Summary:

Intergenerational programs are structured to successfully compound human resources by recruiting elderly adults and young individuals to volunteer in various activities. This enables IGPs to run on a low-cost budget. Also, IGP activities offer various benefits for all community members. Examples include: preservation of cultural traditions and values, improvements in behavioral health and academic performance of participating children, overcoming changes in family structures, drug use prevention, etc. Intergenerational programs have proven to deliver great results when they involve older adults and children. However, IGPs that involve adults with dementia and children are still in the research phase. Concerns include possible frustration and aggressive behavior of participating adults, or confusion and negative attitudes of children. Scientists emphasize that careful planning and execution are important for the success of IGPs. Furthermore, it seems to be essential that adult participants self-initiatively and voluntarily engage the children. Also, in order to avoid boredom and possible agitation, researchers recommend that the adults with Alzheimer's disease or other dementia, be given mentoring roles. In that sense, the Montessori method of educating children or similar activities seem to be suitable.

The conducted research also suggests that IGPs can be combined with elements of music or art therapy. It is important that the selected activities satisfy interests of both the children and the elderly afflicted with dementia.

25 - Michelle M. Lee, Cameron J. Camp, and Megan L. Malone, "Effects of intergenerational Montessori-based activities programming on engagement of nursing home residents with dementia," *Dovepress*, v.2(3), Sep 2007, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2685273/> (accessed October 26, 2012)

There are many facilities suitable for the implementation of IGPs. Intergenerational programs can be implemented in adult daycare facilities, retirement homes, nursing homes, and similar. Finally, there is a wide spectrum of grant funds available for this sort of community-based, non-drug treatment programs, intended for adults with Alzheimer's disease. Some of them are offered by the Grammy Foundation, the Alzheimer's Association, and the US Administration on Aging.

7. FAMILIES LIVING WITH ALZHEIMER'S DISEASE IN HAWAII - KAKAAKO

In order to determine the prospective users for the Alzheimer's Disease Family Care Support Center, I sought specific information about people afflicted with Alzheimer's disease and their families living in Kakaako. The following text summarizes statistical data and surveyed information for Hawaii and the Kakaako district in particular.

7.1 The number of people with Alzheimer's in Hawaii and Kakaako:

The Alzheimer's Association Aloha Chapter serves all of the Hawaiian Islands with offices on Oahu, Hawaii, Kauai and Maui. Their records indicate that 31,000 people with Alzheimer's disease and other types of dementia live in the state of Hawaii.¹ Furthermore, they estimate that there are roughly 112,000 family caregivers in Hawaii.²

The 2010 US Census data show that there are 864 people 65 years and over (approximately 22% of the total population) living in the Kakaako census tract area.³ The Kakaako census tract area (288 acres)⁴ is significantly smaller than the State defined the Kakaako district area (670 acres)⁵. According to the Alzheimer's Association report for the year 2012, one in eight elderly people (65 years and over), has Alzheimer's (13 percent).⁶ Extrapolating these statistics to the Kakaako census area, I estimate that there are approximately 110 elderly with Alzheimer's disease living in the Kakaako census area. The Alzheimer's Association Aloha chapter report for the fiscal year 2009-2010, evaluates that approximately four individuals are involved in providing care for a person afflicted with Alzheimer's.⁷ Therefore, I

1 - Alzheimer's Association Aloha Chapter; "Serving the State of Hawaii," (Alzheimer's Association) http://www.alz.org/hawaii/in_my_community_areas.asp (accessed September 10, 2012)

2 - Alzheimer's Association Aloha Chapter; "FY 2009-2010 Annual Report," http://www.alz.org/hawaii/documents/annualreportfy2010_finalv2.pdf (accessed September 10, 2012), 1 (hereafter cited as AA Aloha Chapter. 2010 Annual Report).

3 - State of Hawaii et al.; "Census Tract 38, Honolulu County, Hawaii," (2010 Census Demographic Profile: Oahu Census Tract, 2010) http://hawaii.gov/dbedt/info/census/Census_2010/demographic/demo_profile_ct_Oahu/2010dp_ct38.pdf (accessed August 20, 2012), 1.

4 - State of Hawaii et al.; "2010 Census Tract Names and Their Population, Housing and Land Area for the State of Hawaii," (Hawaii State Data Center Reports and Tables, 2010) http://hawaii.gov/dbedt/info/census/Census_2010/PL94-171/hsdc_rep2010_2.pdf (accessed August 20, 2012), 25

5 - HCDA; "Final Mauka Area Plan," (Mauka Area Plan and Rules, 2011), <http://hcdaweb.org/kakaako/plans-rules/mauka-area-plan-and-rules/> (accessed August 23, 2012), 1

6 - Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 13-21

7 - AA Aloha Chapter. 2010 Annual Report

estimate that there are roughly 450 family caregivers living in Kakaako census tract. Given the above statistics, if I want to consider specifically a pedestrian neighborhood area in Kakaako (125 acres), I estimate that approximately **55 elderly with Alzheimer's disease** and **225 family caregivers live in that pedestrian neighborhood**. This makes the total of 280 prospective direct users of the Alzheimer's Disease Family Care Support Center facility. Therefore, I plan to develop a family-friendly Alzheimer's disease facility in Kakaako that would need to accommodate roughly 280 direct users.

7.2 The typical caregiving family in Hawaii:

Wesley Lum's PhD thesis "The development of public policies to support people who are balancing work and eldercare in Hawai'i", performed in 2007, sheds light on the demographics of family caregivers in the state of Hawaii. In his research, he prepared a survey of Hawaiian employer responses. The survey was conducted with the help of the Executive Office on Aging, and the University of Hawaii School of Social Work. The surveyed sample was randomly taken from a list of the members of the Chamber of Commerce of Hawaii, Small Business Hawaii, Hawaii Business Roundtable, and the Hawaii Alliance of Nonprofit Organizations. The response represents only 15% from the total of 793 employers to whom surveys were sent.⁸ Therefore, the findings have to be interpreted with this complicity in mind. Nonetheless, Lum's research gives ample clues to who the typical working family caregivers in the state of Hawaii are.

Wesley Lum's results show that nearly 56% of the working respondents were providing care to elderly family members. Furthermore, 78.4% were working full time, 19.9% part time, and 1.7% were both full and part time workers. The majority (96.2%) of unemployed caregivers were retirees.⁹

The survey results further show that 71% of employed caregivers were female, while 29% were male. Also, 73.1% of the respondents were married or living with a partner. Nearly 70% employed caregivers were between 41-61 years old, 22% were between 22-40 years old, and

8 - Wesley Lum, "The Development of Public Policies to Support People Who are Balancing Work and Eldercare in Hawai'i," (PhD diss., University of Hawai'i, 2009), 71-90.

9 - Ibid., 91-132

about 9% were over 61 years old. The biggest three ethnic groups of the employed caregivers were: Japanese 26.5%, Caucasian 24.9% and Hawaiian/Part-Hawaiian 23.6%. Most caregivers were rather well educated. In particular, 44% of employed caregivers had graduated from or completed some college (4 year degree), a little more than 21% had graduated from or completed some community college or technical school, and approximately 19% were post graduates.

Wesley Lum also surveyed the financial situations of the working caregivers in Hawaii. He found that the median annual income of all respondents was \$38,068. Employed caregivers had a median income of \$38,639, while unemployed caregivers had a median income of \$37,600. Almost 40% of employed caregivers had a dependent child under 18 years old. Furthermore (likely because modern medicine helped to increase lifespans), Lum's survey found that 11.2% of the working caregivers were also grandparents raising their grandchildren.

The survey included questions about the intensity of the caregiving situation. These results show that the majority of the working caregivers (nearly 84%) were providing help with shopping, getting to the doctor's office, and other activities known as the Instrumental Activities of Daily Living (IADL). From the aspect of caregiving for the elderly with Alzheimer's disease or other type of dementia these results stand out:

- a) nearly 54% of working caregivers provided care for more than 20 hours per week,
- b) a little more than 51% of working caregivers were helping with dressing, eating and bathing,
- c) and 26% of working caregivers provided care for more than 5 years.

As elaborated in previous sections of this thesis, caregiving can affect the health of a working individual. Experiencing emotional stress, interrupted sleep and physical strain are the problems reported by the majority of the working caregivers in Hawaii. Employed caregivers are typically not alone in their caregiving roles. Other family members, or friends step in to help them from time to time. Over half of the surveyed working caregivers (55%-63%) reported that they received some sort of informal support with their caregiving duties. This support included: preparing meals, cleaning laundry, arranging for care services, helping with financial matters,

getting to the doctor and helping with personal care tasks. Most of them (29.7%) stated that other family members stepped in to help them with caregiving for at least 5 hours per week. The second largest group of the responders stated that they received help from other family members for at least 3 hours per week. Finally, over the 73% of the working caregivers stated that if they were not able to provide help, there would be someone else to step in.

In addition, employed caregivers usually needed to use formal help. Most of the respondents stated that they received public assistance, such as Medicaid (56.7%), nursing services (23.6%) and training/education services (23.6%). Only 13.6% of respondents stated that they use formal help for personal care services, and 10.8% stated that they used adult care services.

Lum's survey also revealed that 16.5% of family caregivers had to reduce the number of their working hours, a little over 11% had to take a leave of absence and nearly 11% had to turn down a promotion. Out of all respondents, 9.3% had to quit their job due to the hardships experienced in their caregiving roles. A huge majority, 94.3% had to rearrange its work schedule, 77.9% had to take some time off during the day, and 56.3% had to arrive late or leave early from work.¹⁰

7.3 Therapy through poetry for family caregivers in Honolulu:

The Alzheimer's Association Aloha Chapter, located on Ala Moana Boulevard, in Kakaako, besides many services and programs that they regularly offer, hosted a unique caregiving Poetry and Journaling Group Workshop. This workshop was initiated by one of the caregivers, Frances H. Kakugawa, a teacher and a published poet. She agreed to take the role of a teacher for a diverse group of caregivers who had never written before, and who never had an interest in participating in regular support groups. This was a very important and successful session because it reached out and brought together family caregivers whose cultures prevented them from venturing outside of their family circles to ask for help or advice. Poetry became a perfect medium for them to express their emotions, and at the same time to keep their privacies for

¹⁰ - Ibid.

themselves. This diverse group of people gathered once a month for over more than one year long period, to learn, share and write together. At the beginning of this workshop, almost all caregivers felt anger, frustration and helplessness. However, as classes progressed, each participant began to develop feelings of personal renewal. Working together they learned to understand the disease and how it affects them. They evolved into new people that were more compassionate, and they learned how to carry on with their caregiving roles with dignity. The workshop resulted in a published book of poems, whose aim was to motivate other caregivers to seek relief/renewal in similar ways.¹¹

7.4 Summary:

There are approximately 55 elderly with Alzheimer's disease and 225 family caregivers who live within a 125 acres (pedestrian) area of Kakaako. According to Wesley Lum's survey, I can conclude that the typical family caregiver is most probably a full-time working woman of Japanese descent, 41-61 years old, married or living with a partner, with the college degree, with no minor children in the household, and about \$38,000 - \$40,000 annual income. She provides eldercare for more than 20 hours per week, where she helps with various ADL and IADL tasks. She has a family support circle that steps in to help for about 5 hours per week. She and her family are most probably receiving some public assistance, such as Medicaid. She is most probably under high emotional stress and experiences frequently interrupted sleep. As a consequence of her demanding caregiving role at home, she is in danger of having her employment affected in a way that she needs to reduce the number of working hours, take a leave of absence, turn down a promotion, or even quit the job. Furthermore, her job routine is most certainly already experiencing interruptions resulting from rearranging her work schedule, taking time off during the day, arriving late and leaving early. If she can find time, she is most probably occasionally involved in some of the support groups at the Alzheimer's Association Aloha Chapter.

11 - Frances H. Kakugawa, *Mosaic moon: Caregiving through poetry: Easing the burden of Alzheimer's disease*, (Honolulu, Hawaii: Watermark Publishing, 2002), viii-xiii.

8. THE KAKAAKO DISTRICT: PHYSICAL CONTEXT

8.1 The Kakaako district in general:

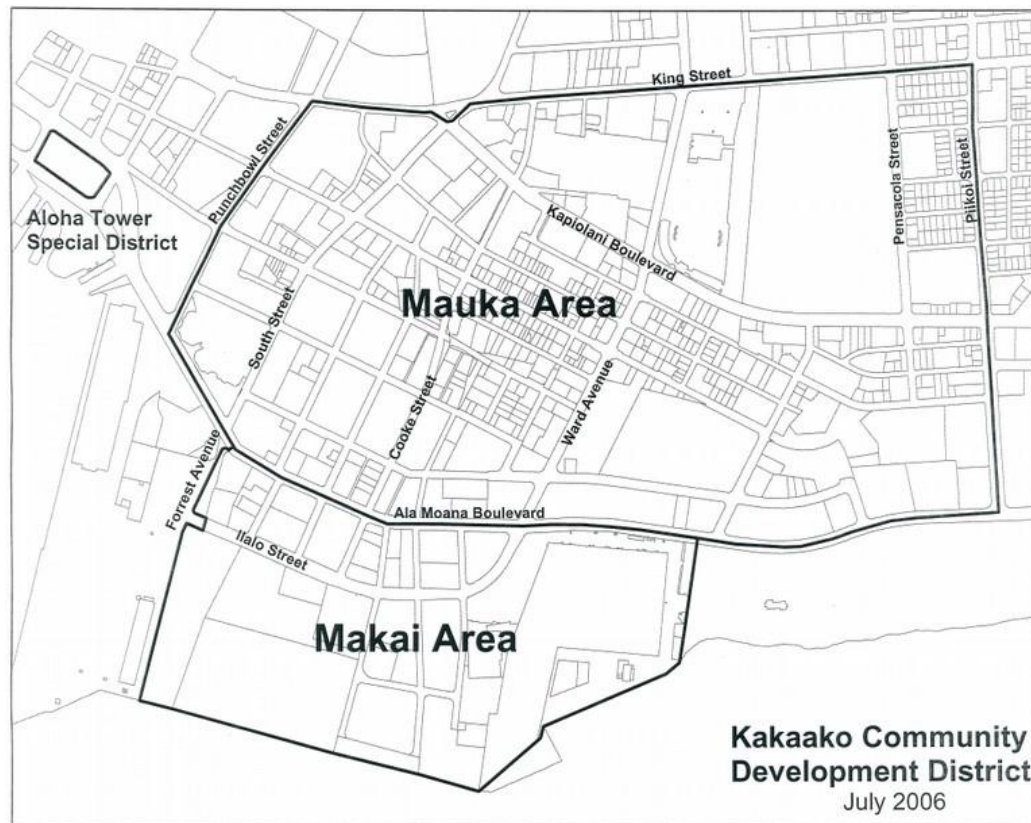


Figure VII, source: HCDA; "Map of Kakaako District Boundaries," (About Kakaako, 2011), <http://hcdaweb.org/kakaako/Boundary%20Map.jpg> (accessed August 22, 2012).

Kakaako is a unique district in Honolulu. It is special because of its odd mixture of different activities and urban conditions in a prime city zone. It fosters functions such as: residential, commercial, retail, public services and healthcare, combined with a lightly industrial character of the area.

The Kakaako district in Honolulu plays an important role in the city life for several reasons:

1. The close proximity to the Downtown and Ala Moana areas (including Waikiki).

- a) Economic importance. (The revitalization of the area will provide new developments, jobs and businesses.)
 - b) Smart growth development. (Kakaako has a huge residential potential that could diffuse the urban sprawl.)
2. Urban-industrial character. (Kakaako is famous for its auto-body repair shops/dealerships, warehouses, furniture shops and other small industrial businesses.)
 3. Historical significance. (Important historical events and people were situated in this area)
 4. Kakaako is the important part of the Honolulu Rail transit system, that will be completed in the year 2019.¹

When the State Legislature created the Hawaii Community Development Authority (HCDA) in 1976, it designated Kakaako as the HCDA's first Community Development District, in order to be carefully planned and revitalized.² The State found Kakaako area to be underused and deteriorated, but with a huge potential to accommodate a variety of needs and economic opportunities for the Hawaiian people. Since the zone change (from industrial to residential/commercial) in 1982, Kakaako became an attraction for high density residential developments.³ As shown in Figure VIII, the Department of Planning and Permitting indicates that the population in Kakaako is projected to rise from nearly 20,000 in the year 2010, to over 30,000 in the year 2030.⁴ The population in Kakaako will surely continue to rise because Kakaako will attract new residents to its new completed/planned residential high-rise developments.⁵

1 - Honolulu Rail Transit; "Interactive Route Map," (Rail Guide) <http://www.honolulutransit.org/rail-facts/frequently-asked-questions.aspx#q7> (accessed September 05, 2012).

2 - HCDA; "About the Hawaii Community Development Authority," (About HCDA, 2012) <http://hcdaweb.org/about/about-the-hawaii-community-development-authority/> (accessed August 15, 2012)

3 - HCDA; "Mauka Area Plan," (Kakaako Plans and Rules), <http://dbedt.hawaii.gov/hcda/files/2013/02/Mauka-Area-Plan-EFF-2011-10-31.pdf> (accessed August 23, 2012), 1-4. (hereafter cited as HCDA. Mauka Plan).

4 - Ibid., 7.

5 - Beverly Creamer, "Kakaako's Building Boom," *Hawaii Business*, September, 2012, <http://www.hawaiibusiness.com/Hawaii-Business/September-2012/Kakaakos-Building-Boom/> (accessed October 10, 2012), 1-2.

(hereafter cited as Creamer. Kakaako's Building Boom).

2010 Actual vs. 2030 Forecast: Population, Housing and Jobs; Kakaako District

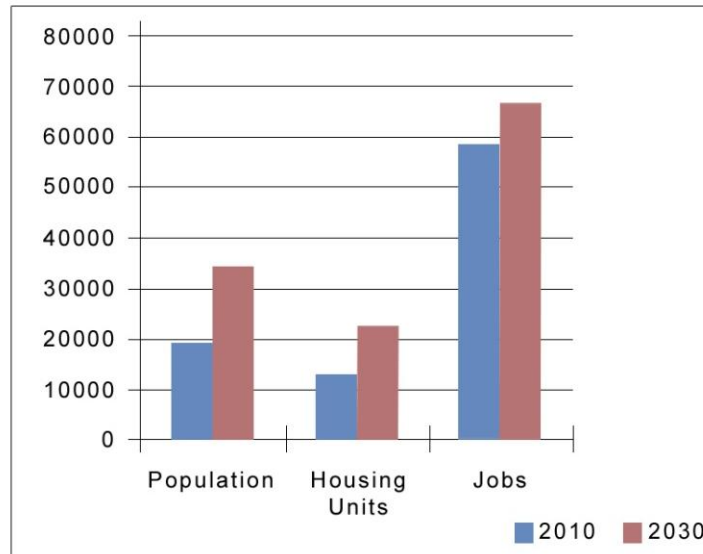


Figure VIII, source: Hawaii Community Development Authority, "Mauka Area Plan," (Mauka Area Plan and Rules, 2011), <http://dbedt.hawaii.gov/hcda/files/2013/02/Mauka-Area-Plan-EFF-2011-10-31.pdf> (accessed August 23, 2012),

8.2 The Kakaako District area distribution and ownerships:

The Kakaako district consists of two areas: Mauka and Makai. Mauka is a 450 acre area bounded by Piikoi, King, Punchbowl Streets and Ala Moana Boulevard. The waterfront area, also known as the Makai area (220 acre), spreads from Kewalo Basin to Forrest Avenue, and to the Hawaiian Electric Company power plant site.⁶ These two areas have different characters and potentials for redevelopment. Therefore, the HCDA has adopted separate sets of Plans and Regulations for Mauka and Makai zones. In general, the goal is to redevelop Mauka into a residential/commercial mixed-use area in order to appropriately connect Ala Moana (and Waikiki) to the Downtown Honolulu district. In contrast, Makai is scheduled to be redeveloped into an area that will offer more public facilities for education, culture, entertainment and recreation.⁷

6 - HCDA. Mauka Plan, 1.

7 - Ibid., 8;

HCDA; "Makai Area Plan," (Kakaako Plans and Rules), <http://dbedt.hawaii.gov/hcda/files/2013/02/Makai-Area-Plan-EFF-2005-10-24.pdf> (accessed August 23, 2012), 14-22. (hereafter cited as HCDA. Makai Plan).

The HCDA, a regulatory body in the Kakaako district, creatively manages to coordinate the community redevelopment. However, the situation is complicated since there are many interested parties involved in this endeavor. To understand this complexity, it is best to illustrate the diverse land ownership in the district (including both the public and the private sector). The breakdown of the land ownership is as follows:

1. The Mauka area:⁸

- The State of Hawaii and City and County of Honolulu = approximately 90 acres of land,
- Utility companies = approximately 14 acres of land,
- Private ownership = approximately 346 acres of land. (Two major landowners in the area are: Kamehameha Schools with 29 acres and Howard Hughes Corp. with roughly 60 acres of land (after buying Ward Centers from General Growth Properties).)⁹

2. The Makai area:¹⁰

- The State of Hawaii = approximately 195 acres of land,
- Kamehameha Schools = approximately 12 acres of land,
- Federal Government = approximately 4.6 acres of land,
- Hawaiian Electric Company, Inc. = approximately 3.4 acres of land,
- Additional Circulation - approximately 6 acres of land.

8.3 Kakaako demographic data:

While some of the needs of the elderly are universal (e.g., social needs, adequate healthcare, etc.), most are unique and based on local influences such as culture, political system, social structure, etc. The cultural mix in Kakaako creates a diversity of needs that different elderly groups in the area have. The ethnical composition of Kakaako is important in order to understand the variations in cultural and family values that prevail in establishing family caregiving relationships.

8 - HCDA. Mauka Plan, 6-7.

9 - Creamer. Kakaako's Building Boom, 1.

10 - HCDA. Makai Plan, 12.

According to the 2007 American Community Survey, performed by the US Census Bureau, the majority of the population in Kakaako is Asian (55%), White (29%), and Native Hawaiian with other Pacific Islander races (4%). The dominant ethnic groups within the Asian population of Kakaako are Japanese (50%), Korean (15%) and Chinese (14%), as shown in Figure IX.¹¹

The US Census data for 2010 show that the elderly (people 65 years and over) present approximately 22% of the total Kakaako census tract population. This percentage in Kakaako is fairly large compared to the entire state of Hawaii 14.3%, or the entire United States 13.1%.¹² The US Census data for 2010 also show that 33.7% of all registered households in Kakaako have individuals 65 years or older living with them. These statistics indicate that the needs of the elderly should be taken into account when making redevelopment plans for Kakaako.

The summarized findings of the report prepared by the *Ha Kupuna* (National Resource Center for Native Hawaiian Elders) and the University of Hawaii Myron B. Thompson School of Social Work, illustrate the specific needs of the native Hawaiian elderly. The research outlines, that the specific need of the Native Hawaiian *kupuna* (elderly) is to be treated in a healthcare system that promotes Hawaiian cultural values. The elderly do not wish to simply be "institutionalized", but rather be assisted by people who understand their culture, language and customs. In addition, *kupuna* typically want to "age-in-place" with their family. Most healthcare institution policies do not allow the presence of family members at all times. These policies disable Hawaiian elderly individuals from conducting the basic Hawaiian ceremony of allowing *kupuna* to pass the "*ha*" (breath) to their close ones.¹³

11 - American Community Survey; "Public Use Microdata Area 0304," (2007 American Community Survey, 2007) http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=8&ved=0CEUQFjAH&url=http%3A%2F%2Fwww.hawaiiieconomicdata.com%2FDBFileDownload.ashx%3Ffile_id%3D674&ei=9VtAUli1NYqzigKox4DwAg&usq=AFQjCNFLD9auJfB8wmfdjCQbkOsunIR1VQ (accessed August 10, 2012).

12 - The Department of Business, Economic Development & Tourism; "Census Tract 38, Honolulu County, Hawaii," (2010 Census Demographic Profile: Oahu Census Tract, 2010) http://hawaii.gov/dbedt/info/census/Census_2010/demographic/demo_profile_ct_Oahu/index.html (accessed September 10, 2012).

13 - Ha Kupuna et al., *Assessing the Health and Long-term Care Needs of Native Hawaiian Elders and Their Caregivers: Results from Key Informant Interviews in Hawai'i*, (Hawaii: Ha Kupuna, September 2008) http://manoa.hawaii.edu/hakupuna/images/keyinterviews_article.pdf (accessed September 18, 2012)

2007 AMERICAN COMMUNITY SURVEY 1-YEAR ESTIMATES, PUMA 0304,
Manoa-Waikiki-Kakaako:

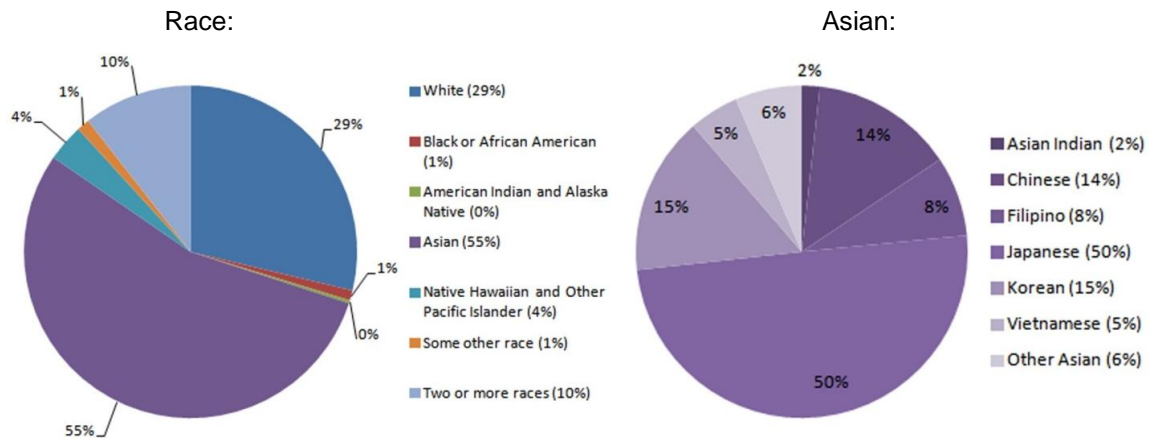


Figure IX

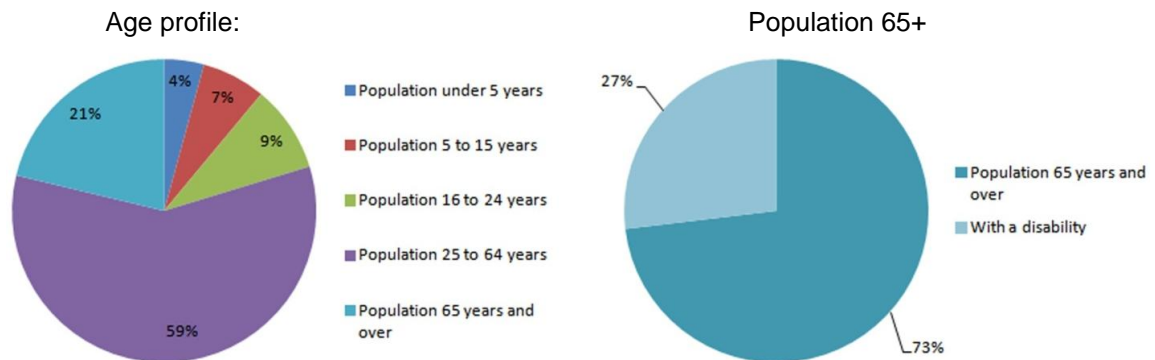


Figure X

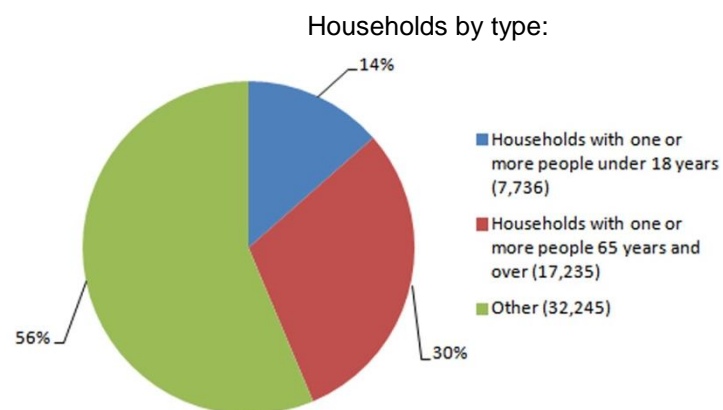


Figure XI

Figure IX, X and XI data source: American Community Survey; "Public Use Microdata Area 0304," (2007 American Community Survey, 2007)

http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=8&ved=0CEUQFjAH&url=http%3A%2F%2Fwww.hawaiiieconomicdata.com%2FDBFileDownload.ashx%3Ffile_id%3D674&ei=9VtAUIi1NYqzigKox4DwAg&usg=AFQjCNFLD9auJfB8wmfdjCQbkOsunIR1VQ (accessed August 10, 2012).

8.4 Facts about Kakaako in its current (transitional) period:

Based on several site visits performed in the period from September 21, 2012, to November 09, 2012, this author made the following conclusions. The physical character of Kakaako today can be described as a combination of two conditions. The first condition consists of the newly developed high-rise residential/retail buildings that are aiming to become new landmarks in the area. The second condition consists of the underdeveloped (or in some cases empty) blocks, with an industrial character, whose streets have no sidewalks and whose buildings are decorated by graffiti art work. Over the past years, Kakaako became famous for its auto-body repair shops, warehouses, arts and crafts workshops, and other creative businesses that nurture the taste of the local culture.

This odd mixture of free-standing residential towers on the one hand, and built-in facade fronts of warehouses and other light-industrial structures on the other hand, creates the uninviting environment for prospective pedestrians in the area. Kakaako residents are practically forced to use their cars, or some form of public transportation, as soon as they leave their homes. The sheer absence of curbs and trees from the streets makes walking, or recreational strolling, unbearable in some parts of Kakaako. During day time hours, the heat accumulated from the sun and the intensive car activity repel pedestrians. People who want to use the bus transit system, find it hard to stand for a long time in the sun waiting for a bus. The problem is the lack of proper bus stop structures in some locations. During evening and night time hours, the streets in Kakaako become empty and unsafe for pedestrians.

Another problem for pedestrians is frequent street flooding in the Central Kakaako industrial neighborhoods. This happens because these areas resist proposed road and infrastructure improvements. In order to understand the cause of this condition, it is important to understand that Kakaako is composed of small lots, many of which are owned by the very businesses that exist there (such as, already mentioned, car repair shops, storages, etc.), and large lots, owned by the big developers. Small businesses mainly resist neighborhood improvements because they believe that their existences are jeopardized by these changes. In

one of the recently performed surveys, for the first phase of Transit Oriented Community Based Economic Development, most of the small business owners responded that they would choose to stay in Kakaako despite rising property taxes and lease rents. They find the location convenient for their customers, and therefore they prefer to stay. However, highly feasible retail/commercial tenets are coming into the district, making it more pedestrian friendly, and the displacement of the existing small industrial businesses is likely to happen in the near future.¹⁴

8.5 New developments:

Kakaako has significantly changed since 1976, when the State appointed the Hawaii Community Development Authority to create and administer the plan for the revitalization of this district.¹⁵ The planning process went through several phases that reflected several different visions for the neighborhood. At the beginning, back in 1982, when the first Mauka plan and rules were adopted, the HCDA envisioned the area with superblocks connected by elevated walkways. Large lots were created through land consolidation processes.¹⁶ That vision changed, and the HCDA reversed their ideas to conventional high-rise neighborhoods with a mixed-use character that emphasize small businesses.¹⁷ Today, the HCDA highlights the importance of the street-level experience, with the goal to develop human-scale pedestrian communities.¹⁸ The revised Kakaako plans, finalized in the year 2011, are the result of the persistent cooperation of this State agency with the community members, Kamehameha Schools (KS), Howard Hughes Corporation, and all other major land owners and developers in the area.¹⁹

14 - Creamer. Kakaako's Building Boom, 2.;
Hawaii'i Alliance for Community-Based Economic Development; "Central Kakaako Economic Engine of the City," (Transit Oriented Community Based Economic Development - Phase II)
http://www.hacbed.org/index.php?option=com_content&view=article&id=65%3Akakaako&catid=55&Itemid=68 (accessed October 20, 2012)

15 - HCDA; "About the Hawaii Community Development Authority," (About HCDA, 2012) <http://hcdaweb.org/about/about-the-hawaii-community-development-authority/> (accessed August 15, 2012)

16 - Vicki Viotti, "Kakaako," *Honolulu Star - Advertiser*, Apr 01, 2012.

<http://search.proquest.com.eres.library.manoa.hawaii.edu/docview/963477586> (accessed October 10, 2012)

17 - Creamer. Kakaako's Building Boom, 1.

18 - Ibid.

19 - Ibid.;

HCDA. Mauka Plan, 3.

The HCDA, on their web presentation, points out that from the mid-1980s until 2010 they have invested roughly \$225 million in infrastructure improvements (e.g., installation of new sewer, water, and drainage systems, new sidewalks, curbs and gutters, street landscaping, etc.), and \$528.9 million in other developments in the area.²⁰ As a reaction to these developments, the private sector invested over \$2.2 billion in mostly mixed-use residential projects, resulting in approximately 2,089 housing units and 1,388 affordable housing units.²¹ In addition, Kakaako today has three developments primarily dedicated to seniors, with approximately 490 affordable housing units.²²

The HCDA has build neighborhood infrastructure and open space, adding a little over 45 acres of parklands to the original 1.7 acres.²³ This includes improvements or new development of following parks: Mother Waldron park, Kewalo Basin park, Kakaako Waterfront park, Kakaako Makai Gateway park, Queen Street extension parks.²⁴

On the list of the recently completed Kakaako projects by the City and the State are: The Children's Discovery Center, Honolulu Fire Department Headquarters Complex (including a Honolulu Fire Department Museum), Kakaako Waterfront Park Amphitheater, Historic Kakaako Ala Moana Pump Station complex (listed in the National Register of Historic Places as well as in the State Register of Historic Places).²⁵ However, the only new healthcare project in the area is the John A. Burns School of Medicine, that includes educational and medical research facilities developed on 9.1 acres.²⁶

The private sector developments are mostly mixed-use residential projects. On HCDA's website the following projects are listed as recent developments in Kakaako: Keola Lai at 600

20 - Creamer. Kakaako's Building Boom, 2.;

HCDA; "Road Improvements," (Kakaako Projects, 2012) <http://hcdaweb.org/kakaako/projects/road-improvements-1/> (accessed October 10, 2012)

21 - Creamer. Kakaako's Building Boom, 1.;

HCDA. Mauka Plan, 3.

22 - HCDA; "Affordable Housing," (Kakaako Projects, 2012) <http://hcdaweb.org/kakaako/projects/affordable-housing/> (accessed October 12, 2012)

23 - HCDA. Mauka Plan, 3.

HCDA; "About the Hawaii Community Development Authority," (About HCDA, 2012) <http://hcdaweb.org/about/about-the-hawaii-community-development-authority> (accessed October 12, 2012)

24 - HCDA; "Parks," (Kakaako Projects, 2012) <http://hcdaweb.org/kakaako/projects/parks-1/> (accessed October 14, 2012)

25 - HCDA; "Other Projects," (Kakaako Projects, 2012) <http://hcdaweb.org/kakaako/projects/other/> (accessed October 14, 2012)

26 - Ibid.

Queen Street (352 housing units, out of which 63 will be reserved), 909 Kapiolani (225 residential units), Moana Vista (492 residential units, out of which 124 will be reserved), Moana Pacific project (720 residential units), the Koolani condominium project (372 residential units), Hoku at 1288 Ala Moana (248 residential units), Vanguard Lofts - 720 Kapiolani Boulevard project (35 residential units), Ward Village shops project (retail structure), Ward Centre Auahi Street Retail Shops, Ward Entertainment Centre, The Altres Building (commercial building), Honolulu Design Center (retail complex), Ward Gateway Retail Center, The Wedding Ring Shop.²⁷

One of the biggest projects to happen in Kakaako is the Honolulu elevated-rail transit system, that is supposed to start operating in 2019.²⁸ It will connect Oahu from Kapolei and Eva Beach to the Ala Moana area. It has two planned stations within the Kakaako neighborhood. The first, called Civic Center, is located on the Halekauwila Street (between South and Keawe Streets). The second, called Kakaako Station, is located at the corner of Halekauwila and Queen Street.²⁹

8.6 Land value in Kakaako:

In order to determine the range of land values in Kakaako, this author used The City and County of Honolulu GIS data base, known as Honolulu Land Information System (HoLIS). From this data base the author was able to access almost any parcel in Honolulu in order to get the information about its land use, tax assessment and values, permits, infrastructure, and environmental data.³⁰

The findings show that the land value in Kakaako is very high. In the Makai area, for parcels located directly on the shoreline, the land value is assessed roughly from \$115 to \$167.5 per square foot, with the median value of roughly \$145 per square foot. Parcels located at Ala

27 - HCDA; "Private Sector Projects--Commercial/Residential," (Kakaako Projects, 2012) <http://hcdaweb.org/kakaako/projects/private-sector-projects/> (accessed October 14, 2012)

28 - Honolulu Rail Transit; "Interactive Route Map," (Rail Guide) <http://www.honolulutrainsit.org/rail-facts/frequently-asked-questions.aspx?q7> (accessed September 05, 2012).

29 - Ibid.

30 - Department of Planning and Permitting; Honolulu Land Information System (HoLIS) <http://gis.hicentral.com/FastMaps/ParcelZoning/> (Accessed October 12, 2012) (hereafter cited as DPP. HoLIS).

Moana Boulevard, again on the Makai side, are assessed from \$131 to \$181 per square foot, with the median value of \$145 per square foot. On the Ala Moana Boulevard, Mauka side, land value is assessed from \$157 to \$167.9 per square foot, with the median value around \$160 per square foot. Land in the Mauka area, in the proximity of the future Civic Center rail transit station, is valued at \$161.5/sf for 5,000sf size lots, and \$170/sf for 10,000sf size lots. As the lot size increases, the assessed land value drops. One of the lowest assessed land values in this neighborhood is \$110.6/sf for a 94,423sf size lot. In the neighborhood surrounding the future Kakaako rail transit station, land is assessed similarly as in the Civic Center station area. Regularly shaped 5,000 and 10,000 square feet parcels are uniformly priced at \$161.5 and \$170 per square foot, respectively.³¹

One of the recent, publicly covered, land transactions in the Kakaako area, was between the Office of Hawaiian Affairs (OHA) and the Hawaii Community Development Authority. Through this transaction OHA acquired 30 acres of the Makai land. This came as a settlement deal between OHA and the State over shared revenues for the use of Public Land Trust lands, in which OHA acquired 10 parcels in Kewalo basin, worth approximately \$200 million, i.e., roughly \$155 per square foot.³² Of the 10 parcels, OHA might develop into residential projects only the two closest to the Ala Moana boulevard.³³

8.7 Summary:

There are many big developments proposed for Kakaako in the near future. Most of the ongoing and proposed developments are residential podium high-rises mixed with commercial, hospitality, business and other functions. However, there is the lack of long-term care projects in the area. The only healthcare facility/complex in the area is the University of Hawaii John A. Burns School of Medicine campus, including the University of Hawaii Cancer Center.

31 - Ibid.

32 - Creamer. Kakaako's Building Boom, 1.

33 - Hawaii Reporter; " Office of Hawaiian Affairs: Hawaii Legislature Passes Kakaako Land Proposal," (March 30, 2012) <http://www.hawaiireporter.com/office-of-hawaiian-affairs-hawaii-legislature-passes-kakaako-land-proposal/123> (accessed October 20, 2012)

9. ARCHITECTURAL IMPLICATIONS

9.1 Federal and State Regulations for Nursing Facilities:

The State of Hawaii Department of Health (DOH) regulations for physical standards of Nursing Facilities are in compliance with the Federal regulations. In fact, the State of Hawaii DOH regulations promulgate far more detailed requirements for space, materials and physical organization of nursing facilities, compared to the Federal body. Together DOH and Federal agencies define the minimum requirements that nursing facilities have to fulfill for the protection of health, welfare and safety of residents, employees and visitors of nursing facilities.¹ A Nursing Facility located in Hawaii can operate only if it acquires the license from the Hawaii DOH. The license is usually issued for a period of one year, during which the Department has to conduct an unannounced inspection (or inspections) for the purpose of further relicensing.²

As noted above, the Hawaii DOH regulates the minimum physical facility standards, obligatory for licensed nursing facilities in Hawaii. These standards define room sizes (in square footage per resident), furnishing materials, built-in appliances, number of toilets and shower rooms, etc. For instance, the State regulates a single resident bedroom to have at least 100sf of usable space, not counting closets, bathrooms, entryways and alcoves. Bedrooms for more than one resident (the Federal and the State maximum is up to four residents allowed per room), are regulated to have at least 80sf of usable space per bed. The minimal spacing between residents' beds in a shared room, required by the State, is three feet. Each bedroom has to have at least one window of at least one-tenth of the gross bedroom area. Also, the State defines that in rooms of wheelchair residents at least one window is low enough to allow outdoor viewing. Pathway from each bedroom to a bathing room, toilet and corridor mustn't go through another bedroom, cooking room, dining room or similar. The State defines that there should be at least one toilet

1 - Electronic Code of Federal Regulations, U.S. Government Printing Office; "Section 483.70 - Physical environment," in Part 483 - Requirements for States and Long Term Care Facilities, <http://www.gpo.gov/fdsys/pkg/CFR-2011-title42-vol5/pdf/CFR-2011-title42-vol5-sec483-70.pdf> (accessed November 11, 2012), 64. (hereafter cited as Federal Regulations. Physical); Department of Health, State of Hawaii; "Title 11, Chapter 94.1: Nursing Facilities: Hawaii Administrative Rules," (April 13, 2012), <http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-94.1.pdf> (accessed November 10, 2012), 3. (hereafter cited as Hawaii DOH. Rules).

2 - Hawaii DOH. Rules, 9-11

room per each eight residents. Toilets may omit washbasins if they already exist in resident bedrooms. Also, at least one shower or tub has to be installed per each 14 beds. Residents and personnel must have separate toilet facilities. Separate toilet and bathing rooms must be provided for each sex (except for couples that occupy shared rooms that include bathrooms).³

The State of Hawaii DOH also defines common spaces for residents. The Department requires that nursing facilities provide one or more areas for dining and social activities. The total area for recreational and dining activities can't be less than 37½ square feet per bed. If the facility has a multi-purpose room for dining and social activities, there should be enough space to accommodate all activities and prevent their collision. If a nursing facility regularly (24 hours or more per week) hosts additional activities for nonresidents (e.g., participants in Adult Day Services), it needs additional space. In particular, each regular nonresident participant requires additional 20sf of dining area, and 30sf of recreational space in order not to overcrowd the facility. One toilet per eight nonresident persons is required in the proximity of common areas. Corridors should have a minimum clearance of 44 inches. However, corridors that serve non-ambulatory and semi-ambulatory patients should be eight feet wide.⁴

The State also requires for living areas in nursing facilities to be designed and equipped to be fully accessible and functional for all residents (especially for residents with disabilities), personnel and the public. The State regulations describe necessary furniture for dayrooms, dining rooms, bedrooms, nurses stations, etc. For instance, reading lamps, tables and chairs (or their equivalents) are demanded in dayrooms. Safe chairs and tables suitable to accommodate all residents, including wheelchaired patients, are required in dining rooms. Each bedroom, toilet and shower needs to have a call system connected to a nursing station, so that residents can call in case of an emergency. In bedrooms, this system should be placed at the patient's bedside. Furthermore, bedrooms need to be furnished with properly sized beds, with adequate mattresses, pillows, bed sheets and blankets, for the convenience of all residents. Also, bedroom furniture should include cabinets and closets, accessible to residents with physical disabilities. Locked

3 - Hawaii DOH. Rules, 43-49

4 - Ibid.

private containers should be available on a facility level, upon resident's request. Nurse stations should at least include a telephone, nurses' call system, writing space, storage cabinets, medical record space and appropriately equipped utility space.⁵

9.2 New research:

Lois J. Cutler:

Over the last decade several researchers analyzed the quality of life (QOL) that nursing facilities in the US provided to their residents. For instance, Lois J. Cutler, PhD (research associate at the Division of Health Policy and Management, at the School of Public Health, University of Minnesota), studied the physical environments over the last decade in 40 representative nursing facilities located in five US States (MN, FL, CA, NY, NJ). More precisely, she conducted three different studies to reach her final conclusions elaborated in the paper "Nothing is Traditional about Environments in a Traditional Nursing Home: Nursing Homes as Places to Live Now and In the Future".⁶ The first study, called "The National Quality of Life (QOL) Study", was conducted between 1998 and 2003, as a contract with the Centers for Medicare & Medicaid Services (CMS).⁷ The main objective of this research was to evaluate how the physical environment, for instance accommodation in private bedrooms, could affect residents' QOLs, and whether the nursing facility employees could measure actual levels of residents' content with the conditions in a facility. She gathered detailed data from the environments of 1,988 residents, accommodated in 131 nursing units of the 40 nursing facilities. The data collection involved separate assessments at three facility levels: the resident's bedroom and bathroom space, the resident's nursing units, and the facility as a whole.⁸ During two to three week long resident's bedroom and bathroom space assessments, specially trained research interviewers conducted

5 - Ibid.

6 - Lois J. Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home: Nursing Homes as Places to Live Now and In the Future," (paper prepared for the Creating Home in the Nursing Home: A National Symposium on Culture Change and the Environmental Requirements, Washington, D.C., April 3, 2008.), <http://www.pioneernetwork.net/Data/Documents/Cutler-Nothing-is-Traditional-Paper.pdf> (accessed November 10, 2012), 4.

7 - Ibid.

8 - Ibid., 4-5.

space examinations and interviews with residents and facility employees. They measured and physically tested the living environments in nursing homes. These tests included the functionality of drawer pulls, light switches, faucets, etc. Cutler personally trained all 40 interviewers to conduct these assessments. Furthermore, she personally visited all 40 facilities and completed the unit and the facility checklists herself.⁹ The second study by Cutler, called "Practical Strategies to Improve Physical Environments in Nursing Homes", was funded by Retirement Research Foundation. The study involved Minnesota nursing facilities that voluntarily participated in the study. The main goal was to learn how facilities could self-improve their environments by conducting evaluations of physical plans of their facilities, and making recommendations about possible low-cost improvements within the facilities' normal annual maintenance budgets.¹⁰ The third study that Cutler used, called "NHRegsPlus", was sponsored by the grant from the Hulda B. and Maurice L. Rothschild Foundation, Chicago, IL. The study was designed as a web-based project called "Comparing State Regulations Affecting Nursing Homes: Implications for Culture Change and Resident Autonomy"¹¹. The website goals included:

- 1) creating a resource of nursing facility regulations applicable to each state,
- 2) creating a tool for comparing and finding differences between those regulations,
- 3) creating a reliable source that offers comparative analyses on how regulations support residents' cultural change, autonomy and QOL, within prescribed safety standards,
- 4) creating user-friendly resource for searching all nursing facility regulations by state and by topic, and
- 5) initiating a dialogue about nursing facility regulations and regulatory practices.¹²

From these three studies, Cutler created an image of a typical nursing facility environment in the US at the beginning of the 21st century. She presented her work at the Creating Home in the Nursing Home, A National Symposium on Culture Change and the Environmental Requirements, in Washington, D.C., on April 3, 2008. Her findings are structured in segments

9 - Ibid., 5.

10 - Ibid., 6.

11 - Ibid.

12 - Ibid.

corresponding to the main three facility levels: the residents' bedroom and bathroom space, the residents' nursing unit, and the facility as a whole. Her findings show that on the bedroom level, some State regulations prescribe more than the Federal minimum, while others limit the residents' flexibility by providing overly detailed spatial organization specifications. The QOL study showed that 58% of the surveyed residents shared their bedrooms with one roommate, 29% resided in private bedrooms, 9% stayed in 3-beds rooms, and 4% in rooms with four or more beds. The study also revealed that in some facilities the actual maximum number of residents in one bedroom exceeded the defined Federal maximum, and counted up to six persons per room. Furthermore, the QOL study assessed the personalization levels of residents' bedrooms in order to understand if nursing facilities provide home-like environments for their residents. The results showed that 85% of the residents possessed photos in their personal spaces, 39% had their doors decorated, 30% had their own chairs, 29% had individualized bedcovers, 18% had individualized lamps, 18% had their own bureaus, and 8% their own drapes.¹³ The study assessed whether residents possessed any items that could enable recreational activities for enjoyment in their personal spaces. The results revealed that 23% of residents did not have a single chair in their bedroom portions, 13% lacked even a single life-enriching item, 40% lacked televisions, only 1% had a bed larger than a single bed, only 1.5% had a small-sized refrigerator, and only 12.5% had a horizontal work surface.¹⁴ Considering that nearly 2 million people live in nursing facilities, it is hard to comprehend that most of these individuals have to spend months, and even years in environments that do not provide any sense of home.¹⁵ Cutler also states that special attention has to be paid to the storage spaces available to residents. According to the conducted surveys, accessibility and the lack of storage in residents' bedrooms and bathrooms is an issue in just about every nursing home.¹⁶ Although, the Federal law demands that facilities provide "...functional furniture appropriate to the resident's needs and individual closet space in

13 - Ibid., 7.

14 - Ibid.

15 - Ibid., 2.

16 - Ibid., 8.

the resident's bedroom with clothes racks and shelves accessible to the resident."¹⁷, most of the surveyed facilities do not fully comply. The QOL study revealed that 65% of the surveyed nursing facility residents used wheelchairs, yet only 7% of the inspected closets had rods accessible to these residents (placed at 36 to 48 inches from the floor). Cutler found that several states specially regulated rod accessibility by requiring rods to be adjustable in height, or adjustable to meet the needs of the residents, or similar definitions.¹⁸ The State of Hawaii's provision, in section §11-94.1-65, requires only that bedroom closets be: "...accessible to and meeting individual resident's needs."¹⁹ Cutler's QOL study further revealed that problems with closet spaces are more observed in shared bedrooms. It is often the case that one roommate has a direct access to the closet, while the other has direct access to the window. This creates an inequity, and potential disputes among roommates. Also, the Federal provision for furnishing a private (locked) closet space in each resident room, was applied only in 37% of the surveyed facilities.²⁰ However, Cutler reports that a bigger problem in nursing facilities is the fact that the Federal and most of the State regulations do not specifically require bathroom storage, or a shelf of any size. From conducted surveys and from her personal visits to nursing facilities, Cutler concludes that accessible closet space in bedrooms and bathrooms could significantly improve resident independence and their right of choice, as well as the efficiency of nursing staff.²¹ Another, often repeated problem in facilities is the distance that residents have to cover to get to restrooms. This decreases residents' independence and prohibits them from freely using all portions of the facility.

Cutler's research further reveals the actual situation on the nursing unit level, which includes nursing stations, lounge/activity spaces, dining, shower/tub rooms, and corridors. All these areas share similar issues as the residents' bedrooms. The lack of space, personalization, and accessibility, long distances that residents need to cover without any help from nursing staff members, create the exact opposite to a home-like environment. Nursing stations are mentioned in Federal regulations only as a place where nurses can receive resident calls. Different states

17 - Federal Regulations. Physical, 66.

18 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 8.

19 - Hawaii DOH. Rules, 47.

20 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 8.

21 - Ibid., 9.

vary in requirements for nursing stations. For instance, Texas specifies that the maximal travel for nursing efficiency be from 85ft to 150ft. Cutler also names Illinois and Kansas as positive examples. The State of Illinois specifies that the nursing unit location should enable visual control without use of mirrors, while the State of Kansas recommends the use of cameras and monitors for visual control.²² On the other hand, the State of Hawaii only specifies that each nursing station should include a telephone, writing space, storage cabinets, medical record space, a nurses call system and an appropriately equipped utility room.²³ Cutler strongly recommends that the traditional behind-the-counter station type should be abandoned, and "... should be replaced with multiple small desk stations large enough to hold a computer and placed in lounge and dining areas where staff can share the space with residents and not be isolated behind a counter."²⁴

The Federal law requires "... one or more rooms designated for resident dining and activities."²⁵ However, lounge and activity spaces varied in all 131 nursing units that Cutler visited. Twenty units lacked even a single lounge space, while only seven units had four separate lounges. Unfortunately, Cutler determined that most of the visited nursing facility units had unsatisfactory conditions in their lounges, some of them lacking even basic features, such as telephones (12%), televisions (24%), or daily newspapers (68%), etc. She finds it alarming that in the 21st century nursing facility residents may not even have private access to a telephone, or internet services. Therefore, Cutler recommends that, as a convenience to residents, nursing facilities should provide internet access and telephone jacks in each room.²⁶

Cutler finds that multipurpose rooms should be avoided, because they often turn out to be impractical, and furniture settings from one activity usually gets in the way of the following activity. Instead, there should be several, smaller and clearly designated areas for watching television, reading, dining, etc.²⁷ Dining areas in nursing facilities most commonly serve as multipurpose rooms. This prohibits the personalization of the space, or the creation of a home-like atmosphere.

22 - Ibid., 10.

23 - Hawaii DOH. Rules, 49.

24 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 10.

25 - Federal Regulations. Physical, 66.

26 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 11.

27 - Ibid.

Also, Cutler noted that the condition and number of dining rooms per unit differed vastly in the examined nursing facilities. Again, extremes, good and bad, were noted. Some facilities offered numerous meal choices, a pleasant dining atmosphere and choice of the preferred dining location among several dining rooms located in the facility. On the other hand, some units had only one designated dining room, that could accept only 40%-50% of the residents.²⁸ One of the troubling examples was a nursing unit, in which most of the residents needed help with transportation to the dining room. This particular dining room was located in the basement, and residents were lined up in their wheelchairs to be pushed to the elevator, leading down to the dining room. In the dining room, their choice over the preferred meal was left to the staff. Staff members were typically rushing to choose something from the offered cafeteria-style meals, to bring back to the waiting residents.²⁹ To avoid these problems, Cutler recommends decentralized dining services into smaller rooms located all around the facility. She argues that a dining table could fit virtually anywhere; for instance in a library, in a lounge, by the fireplace, and so on.³⁰

The Federal regulations require that "...each resident room must be equipped with or located near toilet and bathing facilities."³¹ However, this rule gave freedom to state regulators to determine their own standards separately. Cutler finds that the minimum requirement in some states is one bathtub/shower per ten residents, and in others is one bathtub/shower per 30 residents.³² The State of Hawaii, in particular, regulates that one bathtub/shower serves a maximum of fourteen beds.³³ Cutler's field research revealed that although the Federal regulations require toilet and bathing facilities near resident bedrooms, in reality this distance ranges from 20 to 270 feet.³⁴ This freedom of interpretation caused some nursing facility residents to be less independent in their daily routines, compared to others that do not have to ask for staff assistance to cover longer distances. Cutler also finds that licensing surveyors rarely inspect shower and tub rooms. Her survey reveals that the majority of shower/tub rooms were

28 - Ibid., 12.

29 -Ibid.

30 - Ibid., 13.

31 - Federal Regulations. Physical, 66.

32 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 13.

33 - Hawaii DOH. Rules, 45.

34 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 14.

dark, dank, neglected and poorly maintained. In 63% of all cases, a toilet and sink were located in the shower room, and toilets were in separate enclosures in only 38% of cases. Shockingly, only 15% of the examined shower rooms had heat lamps, and not a single towel warmer was found.³⁵

On the unit level, Cutler examined the functionality aspects of corridors. The Federal regulations require that corridors be fully equipped with handrails on each side.³⁶ Centers for Medicare and Medicaid Services (CMS), in their report titled "Fire Safety Survey Report 2000 Code: Health Care: Medicare - Medicaid", require that "width of aisles or corridors (clear and unobstructed) serving as exit access in hospitals and nursing homes shall be at least 8 feet."³⁷ This provision is made because the 8 foot corridor width is necessary for internal movement of immobile residents in an emergency evacuation. Cutler finds that formally all surveyed facilities satisfy both requirements. However, the survey revealed that 91% of the surveyed facilities used corridors as additional storage space for medical and other clutter.³⁸ This is indeed, against the CMS rules, and it is seriously jeopardizing the residents' safety. Among many colorful examples of how this situation influences residents' QOL, the one describing a resident with only one functioning arm struggling to use handrails available only on the one side of a corridor, because medical clutter occupies the opposite side.³⁹

Further, Cutler's study presents the facility-wide assessment findings. These findings include reports on the presence of amenities, lighting, noise levels, and outdoor spaces. The majority of the surveyed nursing facilities (62%) had libraries, or reading rooms within the facility. A chapel or a meditation room was found in 40% of facilities. Thirty percent of facilities had a coffee shop or a snack bar, another 30% had a children play area, 15% had a cafe, and one facility had a child day care service.⁴⁰ All these amenities, if not integrated well into a nursing facility, can easily end up as failures. For instance, Cutler describes that one of the facilities, that she visited as a part of her research, had an ambitious and attractive town square that was

35 - Ibid., 14.

36 - Federal Regulations. Physical, 67.

37 - Centers For Medicare and Medicaid Services; "Fire Safety Survey Report 2000 Code - Health Care Medicare – Medicaid," (Revision date June 1, 2007), <http://www.cms.gov/Medicare/CMS-Forms/CMS-Forms/Downloads/CMS2786R.pdf> (accessed November 17, 2012)

38 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 15.

39 - Ibid.

40 - Ibid., 16.

envisioned to serve as a gathering space for all residents. However, after four days of behavioral mapping, Cutler concluded that it was actually accessible to staff and residents coming only from assisted and independent living sections. After interviewing the facility residents, she learned that some of the residents had to walk up to 365 feet to get from their bedrooms to the square. Also, in order to get the key for the nearest bathroom, they had to walk 59 feet farther.⁴¹ This example demonstrates how good architectural ideas can turn out to be impractical when all aspects of space accessibility are not considered.

The Federal regulations specifically require that dining and resident activities areas be well lighted.⁴² The State of Hawaii requires that "...patient's rooms shall have artificial light adequate for reading at bedside." Also, the state requires "... night lighting in patient's rooms, toilets, and service areas."⁴³ Cutler adds that, since most states have vague specifications for lighting, in reality the overhead light usually fulfills all functions (e.g., reading light and night light). Therefore she recommends that dimming devices be required, as means for controlling the levels of light.⁴⁴

The Federal regulations require that a facility has to provide comfortable sound levels.⁴⁵ The sound requirements are mentioned even in some state regulations. However, the State of Hawaii doesn't specify any restrictions on noise levels in nursing facilities. Cutler in her study measured noxious levels of noise in many facilities. She discovered that the noise in the bedroom units was constant and came from many sources: alarms, clocks, television, telephones, etc. One of the examples describes a nursing facility, where administration played music for residents over the public address system, leaving no freedom of choice to residents who wanted some quiet time.⁴⁶

Cutler also concludes that the Federal and majority of state regulations do not address the issue of outdoor space for nursing facilities. Only a few states require outdoor space, typically for newly constructed or special care dementia units. For instance, Connecticut requires 10sf per

41 - Ibid.

42 - Federal Regulations. Physical, 66.

43 - Hawaii DOH. Rules, 47.

44 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 17.

45 - Electronic Code of Federal Regulations, U.S. Government Printing Office; "Section 483.15 - Quality of life," in Part 483 - Requirements for States and Long Term Care Facilities, <http://www.gpo.gov/fdsys/pkg/CFR-2011-title42-vol5/pdf/CFR-2011-title42-vol5-sec483-15.pdf> (accessed November 11, 2012), 54.

46 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 18.

resident of outdoor porches or paved patio areas. Also, the State of Washington requires shaded and sheltered outdoor spaces, pavements and landscaped areas to provide accessible surfaces to all residents, flexible outdoor furniture, shrubs, trees, etc. Cutler finds that 55.7% of all surveyed facilities had no outdoor space. Sixteen percent of all facilities were special care units, and out of those, only 61.9% had a direct access to outdoor space.⁴⁷

Margaret P. Calkins:

Margaret P. Calkins, Ph.D, in her paper titled "Envisioning your Future in a Nursing Home" (also presented at the Creating Home in the Nursing Home: A National Symposium on Culture Change and the Environmental Requirements, Washington, D.C., April 3, 2008.), investigated the advantages of nursing facility residents living in private bedrooms, compared to residents living in semi-private bedroom settings. Her investigation caused her to question the actual practicality of the Federal provision that defines how each semi-private bedroom must be "...designed or equipped to assure full visual privacy for each resident."⁴⁸. Furthermore, this provision specifies that the visual privacy should be achieved by installing "...ceiling suspended curtains, which extend around the bed to provide total visual privacy in combination with adjacent walls and curtains;"⁴⁹. Here, Calkins argues how semi-private rooms, in this sense, are envisioned completely against all cultural norms. She argues that a curtain as a visual barrier between roommates, doesn't create any privacy at all; the control over personal space is impossible to achieve, and auditory/olfactory information is certainly impossible to block with curtains alone. She adds that the demanded visual privacy is also sometimes jeopardized if, for example, one roommate doesn't manage to close the curtain on time, or if one roommate receives a greater number of visitors in his/her portion of a shared bedroom.⁵⁰ Therefore, semi-private room settings certainly create a distorted sense of intimacy between two or more nursing facility roommates. To further explain this, Calkins states that many nursing facilities do not offer enough social spaces

47 - Ibid., 18-19.

48 - Federal Regulations. Physical, 66.

49 - Ibid.

50 - Margaret P. Calkins, "Envisioning your future in a nursing home," (Paper prepared for the Creating Home in the Nursing Home: A National Symposium on Culture Change and the Environmental Requirements, Washington, D.C., April 3, 2008.) <http://www.pioneernetwork.net/Data/Documents/CalkinsPrivateRoomsPaper.pdf> (accessed on November 11, 2012), 4-6.

for the number of residents that they accommodate (Lois J. Cutler's study confirms the same⁵¹). Many residents are frail and tire easily, so it is more convenient for them to receive visitors in their bedrooms. Therefore, it often happens that family members can't talk openly in front of other people sharing the same bedroom, and do not have a chance to spend quality time with their loved one.⁵² The lack of privacy for the residents in semi-private bedrooms also includes breaching of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), Privacy and Security Rules. In short, the HIPAA Privacy Rules regulate national standards for protection of individuals' medical records and other personal health information.⁵³ It commonly happens in semi-private bedrooms that a clinician, or another nursing staff member, discusses diagnoses and personal care information with a resident in the presence of his roommates, separated only by a curtain.⁵⁴ According to Calkins, sharing medical information is much less problematic for roommates than the adjustments they need to make in order to accommodate each other's daily routines. Hence, the actual most common causes of emotional tensions among roommates are personality, health condition and cultural diversities among residents sharing a room. Calkins says that: "Hearing someone moaning constantly, seeing them use their bedside commode, listening to their TV shows, not being able to set the temperature the way you want, not being able to keep the door open (or closed) as is your preference, having their clothing take up more than half of the closet—these are the everyday irritants that cause friction among roommates."⁵⁵ But, the most problematic of all, Calkins underlines, are the research-confirmed clinical consequences for all individuals residing in shared bedrooms. These clinical implications are known as "nosocomial infections"⁵⁶. Calkins finds that almost every study exploring this topic in hospitals and nursing facilities finds that residents in shared rooms are more prone to infections such as influenza type A, antibiotic-associated diarrhea, acute nonbacterial gastroenteritis,

51 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 11.

52 - Ibid.

53 - U.S. Department of Health & Human Services; " Health Information Privacy," <http://www.hhs.gov/ocr/privacy/hipaa/administrative/privacyrule/index.html> (accessed November 14, 2012)

54 - Calkins, "Envisioning your future in a nursing home," 4-6.

55 - Ibid., 5.

56 - Ibid., 7.

pneumonia, etc.⁵⁷ When I compare this information, with the statistics derived from patients afflicted with some type of dementia (that show how dementia afflicted individuals in their severe stages of the disease are especially vulnerable to various infections such as pneumonia, sepsis, or similar), I conclude that semi-private bedrooms significantly increase the risk of mortality for these residents. Various studies have shown that infections are the most common cause of death for patients with dementia.⁵⁸ Therefore, these findings should urge State and Federal agencies to update their regulations, and forbid all other bedroom settings except construction of private bedrooms in nursing facilities. This should apply to all new developments, or at least to memory care units. In order to stress the urgency of this matter, Calkins presents several studies. One of them, conducted by Drinka, Krause, Nest, Goodman, & Gravenstein, titled "Risk of Acquiring Influenza A in a Nursing Home From a Culture-Positive Roommate." (published in the *PubMed*, in 2003)⁵⁹, specifically considered the risk of getting influenza A in private and shared-bedrooms. They found that individuals who lived in double-bed rooms had a higher relative risk of getting influenza type A, compared to single bedroom residents.⁶⁰ In continuation, Calkins recalls a study performed in 1994, by Lave, Lin, Hughes-Cromwick & Fine, titled "The Cost of Treating Patients with Community Acquired Pneumonia." (which was presented at Seminars in Respiratory Critical Care Medicine, in 1999)⁶¹. This study shows that the average cost of a nursing home resident hospitalization, due to pneumonia complications, is estimated to be \$7,500.⁶² Considering that nearly 2 million people live in nursing facilities,⁶³ and that approximately 7.6% of all annual infections manifested by facility residents results in hospitalizations,⁶⁴ the total cost of these hospitalizations is fairly high. Bearing in mind that hospitalizations due to nosocomial infections represent typically patients' additional out-of-pocket costs, the logic behind designing semi-private

57 - Ibid.

58 - Carolyn W. Zhu and Mary Sano, "Economic considerations in the management of Alzheimer's disease," *Dove Press*, v.1(2), June 2006, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2695165/> (accessed October 10, 2012)

59 - Drinka PJ, et al., "Risk of acquiring influenza A in a nursing home from a culture-positive roommate," *PubMed*, 2003 Nov;24(11):872-4. <http://www.ncbi.nlm.nih.gov/pubmed/14649779> (accessed November 14, 2012)

60 - Calkins, "Envisioning your future in a nursing home," 8.

61 - Aging Institute of UPMC Senior Services and the University of Pittsburgh; Judith R. Lave, PhD, <http://www.aging.pitt.edu/researchers/about/lave1.htm> (accessed November 14, 2012)

62 - Calkins, "Envisioning your future in a nursing home," 8.

63 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home," 2.

64 - Calkins, "Envisioning your future in a nursing home," 8.

bedrooms has to be further inspected from the financial point of view. Calkins and Cassella took a step in that direction.

Margaret P. Calkins and Christine Cassella:

Calkins and Cassella conducted a study titled: "Exploring the Cost and Value of Private Versus Shared Bedrooms in Nursing Homes.", published in *The Gerontologist*, 2007 issue. Their method included a literature review (examination of over 3,500 articles and books on the topic of long-term care - sourced from the IDEAS Institute's in-house library, along with architectural plans of nursing facilities voluntarily submitted by 24 design firms), combined with interviews (four nursing facility administrators and four architects specializing in long-term care) and work with focus groups in three nursing facilities.⁶⁵ The lack of information in the published literature urged these two authors to conduct a field study. They analyzed 189 nursing facility bedrooms in order to compare the construction costs for three typical bedroom settings: traditional shared, enhanced shared, and private bedroom.⁶⁶ While the meanings of terms "private bedroom" and "traditional shared bedroom" need no further explanation, the term "enhanced shared bedroom", according to Calkins and Cassella, is a room that enables a complete physical division of residents' bed areas, sharing only the joint bathroom and entrance areas. In order to perform the cost analysis for these three bedroom types, Calkins and Cassella measured and tallied room sizes, wall lengths, windows, furniture, associated bathrooms, and similar features. Their cost estimates were made based on typical commercial grade-construction assumptions for the Cleveland, Ohio area. The two authors concluded that the average construction cost for a private room is \$36,515 per person, and for an enhanced shared bedroom is \$25,121 per person. The least expensive is a traditional shared bedroom, that costs \$20,506 per person (all prices include debt service costs).⁶⁷ Besides construction costs, the market prices for the accommodation in private bedrooms also differ when compared to shared bedrooms. A large nationwide study (performed

65 - Margaret Calkins and Christine Cassella, "Exploring the Cost and Value of Private Versus Shared Bedrooms in Nursing Homes," *The Gerontologist*, Vol. 47, No. 2, 2007, <http://www.ideasconsultinginc.com/PDFs/Calkins-Cassella-Bedroom-Study.pdf> (accessed November 14, 2012), 170-171.

66 - Margaret Calkins and Christine Cassella, "Exploring the Cost and Value of Private Versus Shared Bedrooms in Nursing Homes," *The Gerontologist*, Vol. 47, No. 2, 2007, <http://www.ideasconsultinginc.com/PDFs/Calkins-Cassella-Bedroom-Study.pdf> (accessed November 14, 2012), 175.

67 - Ibid.

by the Genworth Financial, in 2005), revealed that the typical per-person price for a shared bedroom accommodation was \$167 per-day, and \$190 per-day for a private bedroom.⁶⁸ However, Calkins and Cassella could not find exact information for accommodation prices in enhanced shared bedrooms. Therefore, they decided to average the construction costs for the enhanced and traditional shared bedrooms, arriving at \$22,814 per person for any kind of a shared bedroom. With this dollar figure Calkins and Cassella calculated that "... the difference in costs (including debt) to construct a private room as opposed to a shared room can be recouped in less than 2 years (596 days)."⁶⁹ In the case when one bed in a shared bedroom stays unoccupied (perhaps because prospective residents choose to go to facilities with available private bedrooms), the recoupment period can be as low as 82 days.⁷⁰ The Calkins and Cassella study shows that private rooms in nursing facilities, compared to shared rooms, do not cost significantly more in the long run. An increase in the accommodation price of just about \$1.25 per day would suffice to pay off the construction cost difference between private and shared bedrooms in a period of 30 years (which is the assumed length of the mortgage).⁷¹ However, as shown in the Genworth Financial study, in reality the accommodation price for a private bedroom is approximately \$23 per-day higher, than for a shared bedroom.

In their study, Calkins and Cassella also tabulated the sizes of rooms corresponding to the three (already mentioned) bedroom types. The traditional shared bedroom average size is 270sf (ranging from 182sf to 380sf), or 135sf per person (ranging from 91sf to 190sf per person); which is all greater than the Federal minimum of 80sf per person. The enhanced shared bedroom size is typically 326sf (ranging from 155sf to 562sf), or 163sf per person (ranging from 77.5sf to 281sf per person). On average, a private bedroom is 214sf (ranging from 101sf to 450sf), where the lower end is close to the Federal minimum of 100sf of usable space per person.⁷²

68 - Ibid.

69 - Ibid.

70 - Ibid.

71 - Ibid., 176.

72 - Ibid., 175.

Finally, in their discussion, Calkins and Cassella, among other things, concluded that there was not enough available information concerning the specific needs of people with dementia. Therefore they recommend more research to be done on the relationship between clinical outcomes and bedroom configurations, in order to possibly reveal ways to decrease distress, agitation or even aggression in individuals with dementia.⁷³

Lois J. Cutler and Rosalie A. Kane:

Lois J. Cutler believes that the QOL in nursing facilities can be improved by changing the physical environment, without any major expenditures.⁷⁴ She and Rosalie A. Kane documented their research in a report titled "Practical Strategies to Transform Nursing Home Environments: Toward Better Quality of Life: Manual", published in 2004, at the University of Minnesota. This research publication preceded the already mentioned paper titled "Nothing is Traditional about Environments in a Traditional Nursing Home: Nursing Homes as Places to Live Now and In the Future", published solely by Cutler. This manual uses some of the same data from the research performed in 1998 (described at the beginning of this chapter), when Cutler conducted a detailed study of 40 Nursing Facilities located in five US States (MN, FL, CA, NY, NJ).⁷⁵

The significance of Cutler and Kane's nursing facility manual is that it provides practical suggestions to management, staff, and board members, how to enhance the QOL in any nursing facility. It shows how the physical environment can be improved through changes in organizational patterns and habits, and offers tools for self-assessments and implementations of creative low-cost improvements.⁷⁶ Cutler and Kane base their theories on the idea that: "The successful vibrant facilities all have one thing in common – a sense of ownership by all the users and a partnership with the larger community."⁷⁷

73 - Ibid., 176.

74 - Lois J. Cutler and Rosalie A. Kane, "Practical Strategies to Transform Nursing Home Environments: Toward Better Quality of Life: Manual," (document prepared under a grant from The Retirement Research Foundation to the University of Minnesota, 2004).

http://pioneer.network.net/Data/Documents/Practical_Strategies_to_Transform_Nursing_Home_Environments_manual.pdf (accessed November 15, 2012), i.

75 - Ibid.

76 - Ibid., 2.

77 - Ibid.

Cutler finds that the QOL of nursing facility residents, staff members, visitors and volunteers are correlated to four separate environmental categories: the physical, the social, the psychological, and the cultural.⁷⁸ A successful modern facility should improve all four environmental categories. Special emphasis has to be placed on the cultural environment, that has been mostly ignored in the medical-facility-model. This includes traditions, values, norms and symbols, that can actually form the home-like settings.⁷⁹ Further, Rosalie A. Kane displays a chart that shows correlations of several QOL indicators with potential environmental influences. For instance, she connects *dignity* with "Adequate storage space in bathroom, facility & room well maintained, signs such as 'incontinence products' and 'bibs' removed."⁸⁰ The main argument, that Cutler and Kane made in their manual is that nursing facilities can stay safe and operational institutions that correspond to all necessary Federal and State regulations, and at the same time, within their regular annual budgets, provide a home-like environment for their residents.

To stay within budget they propose several innovative approaches for acquiring equipment and services from the communal network base. They mention donations from local firms. For instance, some companies probably routinely replace computers and can donate them to nursing facilities for tax deductions⁸¹, or some paint stores may donate paint that has been returned because of customer dissatisfaction⁸², etc. Furthermore, purchases of furniture from home improvement stores and discount stores (instead of hospital supply companies) could save significant sums of money.⁸³ Examples include low priced items in IKEA, Target, or similar. Finally, services could be acquired from volunteers. Examples include intergenerational programs, engagement of high school and college student volunteers to paint walls in residents' rooms⁸⁴, or similar.

In order for nursing staff to identify improvements necessary for their facilities, they need to perform self-assessments. Cutler and Kane underline that it does not suffice to simply provide

78 - Ibid., 4.

79 - Ibid.

80 - Ibid., 6.

81 - Ibid., 10.

82 - Ibid., 72.

83 - Ibid., v.

84 - Ibid., 72.

some furniture in some rooms, or provide accessible closet rods, but it is important to match each user's needs in the nursing home environment. This is only possible to achieve through an assessment.⁸⁵ They suggest that the assessment be conducted at three facility levels: resident rooms and bathrooms, shared environment at the unit level, and facility wide amenities.⁸⁶ Any person, a staff member or manager, or even a group of volunteers, can perform an assessment.⁸⁷ In their manual, the Cutler and Kane present a tool that can be used by a facility staff member, or an architect, in order to conduct an environmental assessment. This tool consists of seven tasks that need to be performed in order to get the answers to assess the QOL in the nursing home:

1. Forming an environmental task force.
2. Starting the discussion.
3. Development of vision, mission, and value statements.
4. The nursing facility floor plan analysis.
5. Physical environment self-assessment.
6. Questionnaires for residents, staff and visitors/volunteers.
7. Goals and new vision statements.⁸⁸

Specific recommendations for memory care units:

The Cutler-Kane's nursing facility manual under the chapter "Innovative and Practical Strategies" describes the physical environments of typical medical-model nursing homes, followed by innovative ideas for improvements which can be easily incorporated.⁸⁹ Although the manual was written for general nursing homes (not specifically for memory care units) the information gathered to prepare the manual came from a sufficient number of memory-care units. In this dissertation, I will use this kind of information to extract the recommendations.

85 - Ibid., 16.

86 - Ibid.

87 - Ibid., 18.

88 - Ibid., 20.

89 - Ibid., 30.

The main goal of memory care units in nursing facilities is to keep residents safe. However, this imperative in many examples poorly reflects on the residents' QOL.⁹⁰ Cutler and Kane cite research which reveals that cognitively impaired residents in special care units use space different than residents from other units.⁹¹ Cutler and Kane further reveal that often-repeated model for memory care units assumes that all cognitively impaired residents have similar, or even identical needs. This typical model doesn't take into account the behavioral differences among residents with different dementia diagnoses. The nursing facility memory units created according to this model typically implemented generic design strategies that were believed to be supportive of all cognitively impaired residents. Cutler and Kane cite several studies that illustrate the most common mistakes. For instance, studies have proven that it is not realistic to assume that painting each wall in a different color, or designing a circular wandering path will trigger the memory of each resident to use that as a clue for orientation.⁹² Also, placing familiar household items in the view of residents doesn't always remind them to use that item as intended. An illustrative example shows how this attempt resulted in a major failure in one nursing facility memory care unit. This unit did not install bathroom doors in residents' bedrooms. They believed that the residents would be stimulated, or reminded to use bathrooms independently if they were enabled to see toilets from their beds. However, this resulted with many residents using toilets inappropriately. They flushed their bed sheets, towels, and similar items down the toilets. When the staff realized the problem, this facility tried to install bathroom doors in these rooms. However, the original bedroom design prevented subsequent door installation (because additional doors were in the way of toilets).⁹³

There are many examples of how the facility budget could be put to a better use. A research cited by Cutler and Kane shows that in most cases memory boxes do not serve their purpose in memory care units. Nursing facility staff reports showed that family members usually resist to maintain them, yet they are expensive to install. Other very expensive items, often

90 - Ibid., 70

91 - Ibid., 69-70.

92 - Ibid.

93 - Ibid.

purchased by nursing facilities, are special closets designed to assist cognitively impaired residents with dressing. Staff reports say that the majority of residents does not benefit from them and still needs human assistance with dressing.⁹⁴

On the bedroom level, Cutler and Kane recommend that the necessary minimal presence of items should not lead to a complete void of room personalization. They suggest that shelves could be placed around the perimeter of the room, in the upper third of the wall height. These shelves should be used to display reminiscing items from residents' lives. Painted wall murals, or illustrations of natural scenes can significantly refresh resident bedrooms. In order to keep this type of work within the regular budget, Cutler and Kane recommend recruiting student volunteers from local high schools or colleges, to paint a different scene in each bedroom.⁹⁵ (This idea is easily transferable to my proposal in Kakaako. For instance, Art and Architecture students from the University of Hawaii at Manoa, would most certainly step in as volunteers for a project like this.)

Therefore, Cutler and Kane suggest that memory care units should engage more people, staff, family members, and volunteers to help residents with dementia, instead further furnishing their environments.⁹⁶

9.3 Summary:

The overall recommendations that Cutler and Kane provide, regarding dementia care nursing facility units, state that all residents have specific needs which have to be addressed in their immediate environments. The designer's goal should be to create flexible spaces that could be easily altered to the specific needs of current residents.⁹⁷ Cognitively impaired residents are not particularly tied to their personal spaces and objects. All spaces actually tend to become

94 - Ibid., 72.

95 - Ibid.

96 - Ibid., 71.

97 - Ibid., 70.

communal.⁹⁸ The imperative should be on using people as assets to help cognitively impaired residents, rather than to use the environment and furnishings for guiding residents.⁹⁹

Calkins and Cassella can't stress enough the importance of providing private bedrooms for all nursing facility residents. Many studies have shown that the QOL and the overall health of persons residing in shared bedrooms are jeopardized, compared to residents staying in private bedrooms.

All four cited authors agree that the Federal and State regulations should be updated by adopting recommendations derived from the latest research discoveries. They agree that a reassessment of the prescribed standards would be timely because many existing facilities do not offer livable home-like environments to their residents. At the very least, they all agree that the bedroom standards should be increased.¹⁰⁰

98 -Ibid., 73.

99 - Ibid.

100 - Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home ," 24.; Calkins, "Envisioning your future in a nursing home," 14.

Level 1		Regulations				Research recommendations				Research findings
Level 1 - Resident's bedroom		Federal	notes:	State of Hawaii	notes:	Lois J. Cutler	notes:	Margaret P. Calkins	notes:	
	private bedroom	100 sf/res	(§483.70(d)(1)(iii))	100 sf/res	...excluding closets, bathrooms, alcoves, and entryways. (§11-94.1-65(e)(4))	> 100sf/res	Recommends more than the Federal minimum.	125 sf/res	...exclusive of toilet room.	average 214sf/resident
	shared bedroom	80 sf/res	(§483.70(d)(1)(iii))	80 sf/res	...excluding closets, bathrooms, alcoves, and entryways. (§11-94.1-65(e)(5))	> 80sf/res	Recommends more than the Federal minimum.	125 sf/res	...exclusive of toilet room.	average 135sf/resident
	max # of res/room	4	Variations may be permitted. (§483.70(d)(2)(iv)(3))	4	(§11-94.1-65(e)(3))	1	2 max	1	/	mostly 2 res/room
	closet space in resident's bedrooms	1/resident	Individual closet space in each resident's bedroom. (§483.70(d)(2)(iv))	required	...for each resident. (§11-94.1-65(e)(8)(D))	enhance min 1/resident	Additional storage in resident rooms and baths.	/	/	Resident storage in their bedrooms is usually built into the wall.
	locked closet space	1/resident	Provide private closet space in each resident room. (§483.15(h)(4))	required	...upon resident's request, on a facility level. (§11-94.1-65(e)(8)(D))	1/resident	A resident should be provided with storage in resident's room that can be locked.	/	/	37 percent of surveyed sample had storage space that could be locked.
	closet space in bathrooms	/	/	/	/	required	Generally, additional out-of-room storage would be an asset.	/	/	41% of the sample had some counter space around the bathroom sink; only 9 resident bathroom had storage space.
	closet design	/	Clothes racks and shelves accessible to the resident. (§483.70(2)(iv))	general provisions	...to meet individual resident's needs. (§11-94.1-65(e)(8)(D))	accessible to current residents	The closet rods located 36 to 48 inches (91 to 122cm) from the floor.	/	/	Most of the inspected closets did not have accessible clothes racks and shelves.
	toilet room number	/	Each resident room must be equipped with or located near toilet and bathing facilities. (§483.70(3)(ii)(e))	1/ 8 residents	(§11-94.1-65(d)(1))	1/bedroom	Adequately sized en suite full bathroom with each bedroom.	/	/	The number of residents sharing toilets ranges from 2 to 20.
	shower room	/	Each resident room must be equipped with or located near toilet and bathing facilities. (§483.70(3)(ii)(e))	1/ 14 beds	The minimum is specified for rooms which are not otherwise served by bathing facilities. (§11-94.1-65(d)(3))	1/bedroom	Adequately sized en suite full bathroom with each bedroom.	/	/	1 shower room per 10 resident units.
	furniture	/	Functional furniture appropriate to the resident's needs. (§483.70(d)(2)(iv))	/	Appropriate furniture, cabinets and closets, accessible to and meeting individual resident's needs. (§11-94.1-65(e)(8)(D))	/	Items that could enhance a meaningful activity, comfort, relationship, and enjoyment.	/	/	23% percent did not have a single chair in their portion of the room
	lights	/	Adequate and comfortable lighting levels in all areas are required. (§483.15(h)(5))	/	Bedside reading light required. (§11-94.1-65(h)(3)) Night light in bedrooms, toilets, and service areas required. (§11-94.1-65(h)(4))	/	Rheostat for bedrooms with no reading lights. Measurements of the available light level should be surveyed regularly.	/	/	Many rooms and common spaces have inadequate light levels.
	installations	/	/	/	/	/	Ample wall outlets and floor outlets for flexibility of arrangements.	/	/	Usually deficiency of fixtures in bedrooms prevent furnishing adjustments to accommodate particular needs of residents.
	communications	/	Privacy in sending and receiving mail (§483.10(i)). Use a telephone in privacy. (§483.10(k))	/	/	/	Telephone jacks, cable access and internet access in each room.	/	/	/

Figure XII, Architectural implications summary

Level 2		Regulations				Research recommendations				Research findings
Level 2 - NF Unit level		Federal	notes:	State of Hawaii	notes:	Lois J. Cutler	notes:	Margaret P. Calkins	notes:	
	nursing station distance from residents' bedroom door	/	/	/	/	85 ft	/	/	/	120ft to 150ft
	nursing station location	/	/	1 per NF unit	(§11-94.1-65(p))	Corridors visible from nursing stations. Exit control - separate the receptionist and care giving staff duties.	Multiple small desk nursing stations, large enough to hold a computer and placed in various areas throughout the facility.	/	/	The majority of the stations are traditionally designed (behind-the-counter station).
	nursing station equipment	Nurses' call system.	The nurse's station must be equipped to receive resident calls through a communication system from: Resident rooms (§483.70 (f)(1)); and toilet and bathing facilities. (§483.70 (f)(2))	Nurses' call system, telephone, writing space, storage cabinets, medical record space and an appropriately equipped utility.	(§11-94.1-65(p)(1) to (3))	one computer	With the increased use of wireless technology small desk stations large enough to hold a computer would be enough.	/	/	/
	dining and resident activities	one or more rooms	These rooms must be: well lighted, well ventilated (with nonsmoking areas identified), adequately furnished and have sufficient space to accommodate all activities. (§483.70(g)(1)to(4))	Dining, diversional, and social activities = 37½sf/bed (§11-94.1-65(b)(3)); If non-residents regularly use the recreation area additional 30sf/person.(§11-94.1-65(b)(3)(D)(iii))	Dayrooms shall be equipped with reading lamps, tables, chairs, or their equivalent. (§11-94.1-65(b)(3)(A))	/	Facilities should avoid multipurpose rooms.	/	/	When the square footage of all shared space, including dining space, was accounted for, each resident's share would be 17sf.
	dining area	same as above (§483.70(g)(1) to (4))	same as above (§483.70(g)(1)to(4))	If non-residents regularly use the dining area additional 20sf/person.(§11-94.1-65(b)(3)(D)(i))	Dining areas shall be equipped with tables and safe chairs. A sufficient number of tables shall be of proper height to accommodate wheelchair residents.(§11-94.1-65(b)(3)(B))	/	Facilities should provide several dining areas all around a NF unit.	/	/	Only 12% of unit dining environments were dedicated solely for dining purposes. Some units had several dining areas, while some didn't cover its full capacity.
	unit level bathroom areas	/	Each resident room must be equipped with or located near toilet and bathing facilities. (§483.70(e))	/	One toilet for each 8 non-resident persons in common areas (§11-94.1-65(b)(3)(D)(iii)); Separate toilet facilities for the use of patients and personnel.(§11-94.1-65(d)(10))	/	Recommends that CMS define "near" in terms of measured distance.	/	/	The distance from the farthest resident room to the nearest shower/ tub room ranged from 20 - 270ft.
	corridors	Width of aisles or corridors serving as exit access is at least 8 ft.	Bedrooms must have direct access to an exit corridor §483.70(d)(1)(iii); Equip corridors with firmly secured handrails on each side (§483.75(h)(3)).	The minimum clear width 44in. Corridors serving one or more non-ambulatory or semi-ambulatory patients 8ft width. (§11-94.1-65(k)(1))	Stationary handrails shall be installed along both sides of corridors.(§11-94.1-65(k)(2))	/	Clear corridor clutter.	/	/	Only 9% of all units had no corridor clutter.

Figure XIII, Architectural implications summary

Level 3		Regulations				Research recommendations				Research findings
Level 3 - Nursing Facility		Federal	notes:	State of Hawaii	notes:	Lois J. Cutler	notes:	Margaret P. Calkins	notes:	
	outdoor space	/	/	/	/	Min. 10sf per resident of outdoor porches or paved patio areas.	Should have: shaded and sheltered areas; accessible walking surfaces; sufficient space and outdoor furniture, etc.	/	/	The majority doesn't have no outdoor amenities.
	the main dining room at a facility level	/	/	/	/	/	Design gathering places for residents in front of the main dining area, or open the dining area and provide salad bar for waiting residents.	/	/	In some facilities it is literally the only dining room and it serves all residents
	central gathering places	/	/	/	/	/	The purpose should be to allow the residents to have more interactions on the facility wide level. Create an area where beverages and snacks are available.	/	/	More facilities are reorganizing or decentralizing into unit focused spaces.
	facility wide amenities	/	/	/	/	/	Library, small coffee shop, chapel, etc.	/	/	
	staff break rooms	/	/	/	/	/	An exercise room, a separate room with a television and couches, a dining room, a room with a pool table, etc.	/	/	/
	activities	one or more rooms	These rooms must be: well lighted, well ventilated (with nonsmoking areas identified), adequately furnished and have sufficient space to accommodate all activities. (§483.70(g)(1)to(4))	/	The facility must provide for an ongoing program of age-appropriate activities designed to meet the interests, physical, mental, and psychosocial well-being of each resident.	/	/	/	/	/
	infection control	/	When the infection control program determines that a resident needs isolation to prevent the spread of infection, the facility must isolate the resident. (§483.65(a)to(c))	one single bedroom (§11-94.1-53(b)(2))	An adjoining toilet room with nurses' call system, a lavatory, and a toilet. Visual observation of the patient must be provided by means of the view window located in door or walls of the room; or by an approved mechanical system. (§11-94.1-53(b)(2) to (3))	/	/	/	/	/
	rehabilitation	/	The resident has the right to be fully informed of his or her total health status. (§483.10(b)(3))	/	Rehabilitation services shall have adequate space, facilities, equipment, supplies and other related resources.(§11-94.1-44(d))	/	/	/	/	/
	social work services	/	/	/	*Appropriately furnished facilities which are easily accessible to the patients being served and which provide privacy for interviews, counseling, and telephone conversations. (§11-94-32 (d)) *(Eff. May 3, 1985)	/	/	/	/	/

Figure XIV, Architectural implications summary

10. CONCLUSION

The analysis of the statistics regarding Alzheimer's disease and its relation to the growing of the elderly population in the US (and in the World) reveals the importance of having affordable long term care facilities in our neighborhoods. Many families cope with this disease with no real cure or relief in sight. The family role in caregiving for a person with Alzheimer's disease is crucial. Both, the families and the afflicted individuals, prefer home care options for as long as possible. However, for the majority of Alzheimer's patients institutionalization at the last stage of the disease is inevitable. Out of all long term care options, Nursing homes stand out for their license and ability to care for residents with Alzheimer's through the entire disease process. Therefore a community-based nursing home project would be a suitable relief for the majority of issues that individuals with Alzheimer's and their family caregivers are facing. A nursing facility that serves the needs of its immediate (walking distance) neighborhood can help maintain the relationship between the afflicted individuals and their family members. Families can stay engaged in the process of caregiving through frequent visits to facility. On the other hand, the afflicted individuals can stay productive and engaged members of the community through the intergenerational programs hosted by the facility.

The statistical research findings show that even in new residential neighborhoods, such as the redeveloped Kakaako, the need for long term care is great, and should not be overlooked at any stage of the planning process. With its new developments, Kakaako is rapidly growing. It is envisioned for the district to become a versatile pedestrian community for all ages. However, there are no long term care projects proposed for Kakaako at this moment. The price of land and construction are probably the most important reasons that discourage the long term care industry from developing in this neighborhood. Therefore, the idea to develop several small walking-distance nursing facilities seems to be reasonable for Kakaako. The field research revealed that through partnering with some of the governmental agencies (or even with big developers on the market), these types of small-scale projects could get significant subsidies. Therefore the

development cost could be significantly reduced. Furthermore, the Kakaako district is constituted of small lots, 5,000 and 10,000 square feet typically. In the urban redevelopment process, these lots are merged into big block cells, suitable for the needs of the new high-density projects. However, there are still plenty of small lots left to choose from for the purpose of constructing several small-scale nursing homes in Kakaako. The statistical research further reveals that there is approximately 55 older people with Alzheimer's disease and 225 family caregivers living in a pedestrian neighborhood (125 acres) of Kakaako today. This means that four of these size nursing homes would accommodate a total of 220 residents, which would be enough to cover the total Kakaako Mauka district area (450 acres) at this moment.

Even though institutionalization presents the ultimate/inevitable step for families afflicted with Alzheimer's, there is still a big taboo regarding putting people in facilities such as nursing homes. For that reason, this author researched architectural implications that can enhance the quality of life for nursing home residents. Over the last decade numerous researchers analyzed nursing facilities in the US and provided proposals for their improvement. According to their published work several major recommendations stand out as the most important to consider when designing a new nursing home:

1. A nursing home should provide a home-like environment for its residents.
2. Instead of relying on the physical environment and furnishings to cue the residents in their daily activities, nursing homes should restructure their staffing patterns and use people to help cognitively impaired residents.
3. The interior design should allow for the flexibility of spaces that could be easily altered to the specific needs of the residents.
4. The importance of the private bedroom versus semiprivate bedrooms is underestimated at the moment. Private bedrooms have a positive impact on the overall health and the quality of life of residents, contrary to semiprivate bedrooms. Researchers even suggest additional square

footage to those recommended in the Federal and State regulations, approximately 125sf per person.

Compared to the traditional nursing homes that mostly implemented the bare minimum requirements proclaimed by the Federal and State regulations, these new recommendations can offer better qualities of lives to its residents. However, it is not enough just to develop a homelike facility and enlarge the room sizes. Good relationships with family, staff and the community are some of the most important factors that significantly enhance the quality of life for nursing home residents.

11. DESIGN/RESEARCH DOCUMENTATION

11.1 The nature of the research

Alzheimer's disease is a progressive disease, and over time the symptoms can become so severe that the institutionalization of afflicted people becomes inevitable. The previous literature review performed by this author reveals that nursing homes are the best suited to admit residents that have reached the advanced stages of Alzheimer's disease. All other long-term care facility types can serve as good transitional options throughout the early stages of memory loss, but a nursing home is the only option that provides 24-hour skilled nursing care. Therefore this dissertation focuses on memory care nursing homes.

In order to enable natural integration of the elderly with dementia into the communal life, the author selected the vibrant, centrally located neighborhood of Honolulu, known as Kakaako. This neighborhood is currently going through an early stage of the urban redevelopment transformation from a light industrial to a residential mixed-use character. The ongoing redevelopment process has already generated new high-rise residential communities in the middle of the light industrial milieu. This condition actually presents a good opportunity for the seamless integration of the memory care nursing home residents into a communal life at the early stage of the neighborhood creation. It is often more difficult to achieve the desired integration at a later time (because neighborhood bonds/patterns tend to define themselves early on) so the earlier, the better.

In the extended literature review phase of this thesis the author revealed that there are three major factors for the successful quality of life enhancement of the nursing home residents:

1. Resident's family.
2. Nursing home staff.
3. Neighborhood community.

Therefore, the goal for this research is to envision a nursing home model that would physically (the architectural aspect) and structurally (the managerial aspect) enable all these three social components to support a better quality of life for Alzheimer's care facility residents.

I already addressed the neighborhood community relationship component during the site selection process. In the continuing chapters, I further elaborate on the chosen site's potential.

The quality of the family and nursing home staff relationships with the residents must be reflected in the design program components. Therefore the purpose of this research study is to explore the program requirements that would nurture these relationships in a home-like manner. This researcher considered several aspects of importance for the program development process:

1. Nursing homes operating costs and finances.
2. Nursing homes in Hawaii (conducted site visits and qualitative analysis).
3. The minimum program requirements proclaimed by the Federal and State agencies.
4. The modern nursing facility models.

The culmination of this thesis is a program for a 55-bed Alzheimer's memory care nursing facility in Kakaako, followed by the design proposal as the final outcome of this research.

12. SITE ANALYSIS

12.1 Location, boundaries, square footage, land value and ownership:

The selected site for the Alzheimer's memory care nursing home, is situated in the urban block bounded by Cooke, Queen, Coral and Halekauwila Streets. More precisely, it is located on the corner of Cooke and Queen Streets. There are three senior housing structures in the proximity of the selected site. The first one, the Na Lei Hulu Kupuna senior rental housing complex, is located on the opposite corner of the same urban block where the selected site is situated. In 1992, the Hawaii Community Development Authority (HCDA) and several other government agencies built the Na Lei Hulu Kupuna complex, that enjoys the direct views of the Mother Waldron public park. The complex provides 75 affordable studio rentals for seniors.¹ In addition to this, there are two more senior housing structures nearby. One of them is the Pohulani complex, bounded by Coral, Queen and Keawe Streets. It was also developed in 1992 by HCDA in cooperation with several other government agencies. This complex provides 262 rental units for seniors.² The third senior rental housing building in the neighborhood is the Honuakaha, located on 545 Queen Street. This building was developed in a partnership between HCDA and First Hawaiian Bank. The Honuakaha provides 243 affordable housing units.³

Besides the Mother Waldron public park (3.26 acres), the neighborhood has two more parks; the Gateway park (1.97 acres) and the Kawaiahao mini park (0.21 acres)⁴. This author also looked for the presence of schools in the area. Several facilities were located. The childcare center Alu Like Inc., situated on the corner of Keawe and Pohukaina Streets, is approximately 0.33 miles away from the selected site.⁵ Furthermore, there are three school facilities located in the pedestrian neighborhood of the site: Voyager Charter School (elementary school, middle

1 - HCDA; "Affordable Housing," (Kaka'ako Projects) <http://hcdaweb.org/kakaako/projects/affordable-housing/> (Accessed October 12, 2012)

2 - Ibid.

3 - Ibid.

4 - Department of Planning and Permitting; Honolulu Land Information System (HoLIS) <http://gis.hicentral.com/FastMaps/ParcelZoning/> (Accessed October 12, 2012) (hereafter cited as DPP. HoLIS).

5 - Ibid.

school and high school), Myron B. Thompson Academy (middle school and high school), and Stepping Stones Academy (elementary school and preschool).

The selected site is accessible by public and private transportation. There are two bus stops on the Queen Street, practically in front of the selected site. In addition to the public transportation, people who prefer using private vehicles can use street parking located on Cooke and Halekauwila Streets. HCDA's plans for the redevelopment of Kakaako, propose that Cooke Street be transformed into a street with promenade sidewalks.⁶ The promenade street would connect all neighborhood parks into one recreational, strolling zone. In addition to this, the Honolulu rail transit system is planned to be completed in 2019. The rail route will pass through Halekauwila Street. The Civic Center rail station is planned to be located two blocks away from the selected site (0.23 miles).⁷ The Honolulu rail system, in combination with the planned Transit Oriented Development (TOD) projects (such as the future state's tallest building at 690 Pohukaina Street)⁸, will most certainly increase the pedestrian activity in the neighborhood. In order to further promote alternative transportation options, the Kamehameha Schools Kakaako Mauka Master Plan proposes bicycle routes and trolley paths that would cover the entire Kakaako area. Furthermore, the Kamehameha Schools envision to create an outdoor/indoor community gathering place on the intersection of Cooke and Auahi Streets. The planned Alzheimer's memory care nursing home site would be located on the border of the comfortable 1/4 mile walking radius zone from this new community focal point. Therefore, there is a high likelihood that the new envisioned marketplace (or a similar community gathering place) would be visited by the resident's families involved in the proposed Alzheimer's Support Center.⁹

6 - HCDA; "Mauka Area Plan," (Kakaako Plans and Rules), <http://dbedt.hawaii.gov/hcda/files/2013/02/Mauka-Area-Plan-EFF-2011-10-31.pdf> (accessed August 23, 2012), 24-34.

7 - Honolulu Rail Transit; "Interactive Route Map," (Rail Guide) <http://www.honolulutransit.org/rail-facts/frequently-asked-questions.aspx#q7> (accessed September 05, 2012);

DPP. HoLIS

8 - Beverly Creamer, "Kakaako's Building Boom," *Hawaii Business*, September, 2012, <http://www.hawaiibusiness.com/Hawaii-Business/September-2012/Kakaakos-Building-Boom/> (accessed October 10, 2012)

9 - HCDA; "Chapter 4: Urban Design Framework," (Kamehameha Schools Kakaako Mauka Master Plan, 2008) <http://www.hcdaweb.org/kamehameha-schools-kaka-ako-mauka-lands-2025-master-plan> (Accessed October 10, 2012), 1-10.

The selected site consists of two lots. The first lot (hereafter referred as Lot 1), with the Tax Map Key (TMK) number 21051001, has an area of 13,551sf, and is owned by the Magoon, John H SR trust estate. Lot 1 is situated on the very corner of Cooke and Queen Streets. The assessed land value is \$2,243,300 (approximately \$165.5/sf). The building on Lot 1 has one level with 9,128sf floor area. The assessed building value is \$331,700.¹⁰ The building was originally erected as the Kewalo Theater, and it was opened on November 5, 1937, when Kakaako was still designated as a residential district. The building architect was C. W. Dickey, hired by the original owner, the Consolidated Theaters. After the district changed into a commercial-industrial zone, the theatre was closed on March 31, 1957. For many years thereafter it was used as a film exchange storage. Today, it is used by various retail stores.¹¹

The second lot (hereafter referred as Lot 2), with the Tax Map Key (TMK) number 21051014, has an area of 10,409sf, and is owned by the Hawaii Community Development Authority (HCDA). The lot is currently empty. One portion of the lot (6,944sf)¹² serves as designated parking for the nearby Na Lei Hulu Kupuna residential building and several other local retailers. The other portion of the lot (3,465sf)¹³ serves as the Na Lei Hulu Kupuna residents' garden. The lot has only one entrance, from Cooke Street. The land value is \$1,769,500 (approximately \$170/sf).¹⁴

12.2 Zoning provisions and land use:

The permitted building types and heights for the selected site are: podium high rise (400 feet), urban block and "Lei" building (100 feet), courtyard building (65 feet), townhouse (45 feet). The maximum allowed Floor Area Ratio (FAR) is three point five (3.5). The designated land use for the site is mixed-use.¹⁵ Under the mixed-use designation, HCDA's Mauka Area Plan and

10 - DPP. HoLIS

11 - Lowell Angell, *Theatres of Hawai'i* (Charleston, South Carolina: Arcadia Publishing, 2011), 75.; Bob Dye, editor, *Hawai'i chronicles II: contemporary island history from the pages of Honolulu magazine*, (Honolulu, Hawaii: University of Hawai'i Press, 1998), 49.

12 - DPP. HoLIS

13 - Ibid.

14 - Ibid.

15 - HCDA; "Neighborhood Zone NZ.1-7," (Mauka Area Plan and Rules, 2011), <http://hcdaweb.org/kakaako/plans-rules/mauka-area-plan-and-rules/> (accessed August 23, 2012), 26.

Rules show a long list of specific permitted uses. Allowed uses that can be associated with Alzheimer's Family Care Support Center are:¹⁶

OFFICE:

- Administrative

CIVIC:

- Group Assembly
- Conference Center
- Cultural Facilities
- Park & Recreation
- Public Building
- Religious Facility
- Theater

CIVIL SUPPORT:

- Consulates
- Hospital
- Medical & Dental Clinic

EDUCATIONAL:

- Day Care Center
- Educational Facilities
- Vocational School

12.3 The site's potential:

The maximum permitted Floor to Area Ratio (FAR) of 3.5, allows for a 36,431.5 square feet building to be erected at the Lot 2 (HCDA's lot). However, if the FAR from the Lot 1 (Magoon, John H SR trust estate's lot) gets transferred to the Lot 2, the maximum building floor area for the new structure would be almost doubled.

$9,128\text{sf (Kewalo theatre area)} / 13,551\text{sf (area of Lot 1)} = 0.67 \text{ (existing FAR for Lot 1)}$

$3.5 \text{ (maximum allowed FAR)} - 0.67 \text{ (existing FAR for Lot 1)} = 2.83 \text{ (transferable FAR)}$

$2.83 \text{ (transferable FAR)} + 3.5 \text{ (max allowed FAR for Lot 2)} = 6.33 \text{ (new max FAR for Lot 2)}$

$6.33 \text{ (new max FAR for Lot 2)} \times 10,409\text{sf (area of Lot 2)} = \underline{65,888.97\text{sf}} \text{ (max building floor area for Lot 2)}$

¹⁶ - HCDA; "General Figures 1.7-1.16," (Mauka Area Plan and Rules, 2011), <http://hcdaweb.org/kakaako/plans-rules/mauka-area-plan-and-rules/> (accessed August 23, 2012), 13

In order to investigate this theory, on November 09, 2012, this author visited the HCDA's offices, at 461 Cooke Street. On that occasion the author talked with Mr. Deepak Neupane, the HCDA Director of Planning & Development, in order to find out what tools are available to this State agency for assisting long-term care projects in Kakaako. Mr. Neupane said that in the past, HCDA had assisted similar projects. He mentioned the Na Lei Hulu Kupuna senior rental housing complex, at 610 Cooke Street, and the ongoing Artspace project (affordable units for Native Hawaiian artists) at 1025 Waimanu Street. He explained that HCDA generally assists projects that have a strong public purpose. In that case, they typically offer to lease the HCDA lands for \$1 per year, up to 65 years. However, Mr. Neupane emphasized that these terms would apply only to nonprofit organizations. Otherwise, if the project starts to make profit HCDA expects a return from the revenue flow.

Given the uncertainties of whether the owner of Lot 1 would be willing to sell/lease the lot, and given the willingness of the owner of Lot 2 (HCDA) to lease the lot to nonprofit organization under extremely favorable terms, this dissertation will consider only Lot 2. Therefore, the new building would be limited to a total area of 36,431.5sf. Since this square footage is relatively small, it is prudent to first analyze whether a nursing home could exist on such a small lot. For that purpose, I sought to find (and analyze) compatible examples in Oahu.

The selected examples are the Plaza at Punchbowl assisted living facility and the Island Nursing Home. The data on these facilities will be used to assess a preliminary number of prospective residents for the project development on Lot 2. The tax information for the Plaza at Punchbowl shows that the assisted living activities employ 74.12% of the total building area, which equals 69,001sf. The rest (12,784sf) is reserved for various social activities. On the other hand the second property, the Island Nursing Home facility, has 100% of its space designated to nursing services (according to their tax reports). Furthermore, the Plaza at Punchbowl accommodates 137 residents. This reveals that they offer 503.66sf of designated space per resident. The Island Nursing Home facility accommodates 42 residents, which shows that they have 288.59sf of designated space per resident. This designated space includes bedroom,

bathroom, and common spaces that facility has to provide. If I apply the greater spatial requirements (503.66sf/resident) to the 74.12% of Lot 2 maximum allowed building area ($36,431.5\text{sf} \times 0.7412 = 27,003\text{sf}$), the numbers show that it would be possible to accommodate roughly 55 residents in the new facility. This number seems to be consistent with the estimates showing that there are approximately 55 people with Alzheimer's disease currently living within the pedestrian vicinity of the proposed Lot 2.¹⁷

12.4 Scaling: replication prospects:

The preliminary site analysis shows that it would be possible to develop a small-scale nursing facility for 55 residents afflicted with Alzheimer's disease on the selected site in Kakaako. Four projects of this size in the Kakaako Mauka district would completely satisfy the current demands in the area.

A small-scale nursing facility would be perfect for a walking distance neighborhood. It would allow frequent engagements of family members and the community. A small-scale project like this is potentially replicable. There are many typical 5,000 and 10,000 square feet parcels in the Kakaako area, that would potentially be suitable for a project such as this. Also, other districts in Honolulu have an abundance of small lots, possibly available for long-term care projects.

If this type of a project gets widely spread, two major issues could be addressed. The first one is the prevention of alienation among the closest family members. By replicating this type of a small-scale projects around the city, the elderly individuals would stay and live within walking distances of their families. The second issue is the huge institutionalization cost. In that sense, long-time care facility developments on small lots throughout the city would provide a major advantage. There is a high likelihood that, through partnerships with some of the Government agencies (or even with big developers on the market), this type of small-scale projects could get significant subsidies. Therefore the development costs could be significantly reduced.

17 - State of Hawaii et al.; "Census Tract 38, Honolulu County, Hawaii," (2010 Census Demographic Profile: Oahu Census Tract, 2010)

http://hawaii.gov/dbedt/info/census/Census_2010/demographic/demo_profile_ct_Oahu/2010dp_ct38.pdf (accessed August 20, 2012), 1;

Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 13-21.

13. PROGRAM IMPLICATIONS

13.1 Long-term care examples in Honolulu

After several site visits, and thorough internet searches (in the period from September 21, 2012, to November 09, 2012), this author concluded that there are no nursing facilities in Kakaako. Also, there are no long-term care projects planned for Kakaako. Therefore, in order to better understand the physical context of existing long-term care facilities in Honolulu, this dissertation presents a detailed analysis of one assisted living facility and one nursing facility. The first facility, the Plaza at Punchbowl, was chosen because it is a fairly new structure, and represents the long-term care model that this author valued as a good example to follow. The second facility, the Island Nursing Home, situated in an older building, is small in size and reflective of spatial constraints that are encountered in the selected parcel (Lot 2) in Kakaako.

These two sites are the same ones considered in the size analysis in the previous chapter. In this chapter, I further analyze the two sites as guiding examples for defining the Kakaako nursing facility program implications.

The Plaza at Punchbowl, 918 Lunalilo St., Honolulu, HI:

The Plaza at Punchbowl is a privately owned rental assisted living community located in the urban part of Honolulu. More precisely, it is located in the Lower Punchbowl neighborhood, adjacent to the Kakaako community. It is a fairly new facility, built in 2003, and opened in 2004.¹ The Plaza was developed by the MW Group Ltd. They consolidated five smaller lots into a property of 37,402sf, that has an assessed value of \$1,350,700, which is approximately \$36.1/sf.²

The Plaza at Punchbowl has six operating floors and a basement, with the total building area of 93,093sf. The first floor is reserved for social activities, and has an area of 12,784sf.

1 - Department of Planning and Permitting; Honolulu Land Information System (HoLIS)
<http://gis.hicentral.com/FastMaps/ParcelZoning/> (Accessed October 12, 2012)
(hereafter cited as DPP. HoLIS);

The Plaza Assisted Living; "The Plaza at Punchbowl," <http://www.theplazaassistedliving.com/the-plaza-at-punchbowl/>
(accessed October 24, 2012)

2 - DPP. HoLIS

Assisted living services are located from the second to the sixth floor, and occupy an area of 69,001sf, which represents 74.12% of the total building area.³

The Plaza at Punchbowl provides accommodation in studio, one bedroom, two bedroom, and semi-private units, with the total of 137 beds for seniors.⁴ Accommodation costs in the Plaza start at \$3,200 per month. For comparison purposes, this author found data showing that the average price for private care providers in Honolulu is \$8,790 per month.⁵ In addition, the Plaza does not accept Medicare, Medicaid, Veteran's benefits or any other available type of subsidy.

The Plaza provides memory care services.⁶ In accordance with the Hawaii Department of Health assisted living regulations, all residents (including memory care residents) have to be ambulatory in order to reside in the Plaza. Therefore, the most common reason for discharging Plaza residents is their diminished ability to walk.⁷

Activities offered in the Plaza are: exercises, excursions, art activities, bingo, movies, pet visitations, etc. On every fourth Saturday in the month, Alzheimer's Association holds support group sessions in the Plaza, that are open to the public.⁸

Island Nursing Home, 1205 Alexander Street, Honolulu, HI:

The Island Nursing Home is a small facility, that offers accommodation for 42 residents. It is located in the McCully-Moiliili neighborhood, on the corner of South Beretania Street and Alexander Street. The construction of this building was completed in 1965.⁹ It is licensed to provide skilled nursing services.¹⁰ The lot size is 6,105sf. The land value is assessed at

3 - DPP. HoLIS

4 - MW Group; "The Plaza at Punchbowl," <http://mwgroup.com/plaza-at-punch-bowl.asp> (accessed October 25, 2012); Our Parents; "The Plaza At Punchbowl," https://www.ourparents.com/hawaii/honolulu/the_plaza_at_punchbowl (accessed October 25, 2012)

(hereafter cited as Our Parents. The Plaza)

5 - Our Parents. The Plaza

6 - Ibid.

7 - Ibid.

8 - Ibid.

9 - DPP. HoLIS

10 - Our Parents; "Island Nursing Home," https://www.ourparents.com/hawaii/honolulu/island_nursing_home (accessed October 25, 2012)

\$940,200, which equals \$154/sf. Nursing services are located on four floors, with the total area of 12,121 square feet.¹¹

For comparison purposes, the land price for several other nursing facilities in Oahu, that accept Alzheimer's patients, is as follows:¹²

Arcadia Retirement Residence has Independent Living nursing facility = \$118.9/sf

Hale Ola Kino nursing facility = \$126.4/sf

Convalescent Center Of Honolulu nursing facility = \$123.9/sf

The average accommodation price for the Island Nursing Home is much higher than for the Plaza at Punchbowl, and it is assessed at \$7,560 per month. However, the Island Nursing Home facility accepts Medicare and Medicaid as payment options.¹³

The quality rating system for Medicare advantage plans, run by the Centers for Medicare and Medicaid Services, showed the highest (five star) rating for the Island Nursing Home facility. This indicates that Island Nursing Home provides an adequate level of care, has adequate correlation between the patient outcomes and the number of care hours provided by registered nurses, licensed practical/vocational nurses, and certified nursing assistants, and has received satisfactory ratings during regular inspections concerning food, safety, and similar issues.¹⁴

11 - DPP. HoLIS

12 - Ibid.

13 - FindtheBest; " Island Nursing Home in Honolulu, Hawaii," <http://nursing-homes.findthebest.com/l/2877/Island-Nursing-Home> (accessed October 25, 2012)

14 - Our Parents; " Island Nursing Home," https://www.ourparents.com/hawaii/honolulu/island_nursing_home (accessed October 25, 2012)

13.2 Nursing home operating cost analysis

High prices of nursing facility services are directly related to their high operating costs.

Operating costs are in general influenced by:

- the intensity of residents' needs for nursing or therapeutic care,
- management's ability to determine the right staffing mix to meet the residents' needs.¹⁵

The 2011 research conducted by the United States Government Accountability Office, reveals that employee salaries and labor-related costs account for more than half of all facility's operating costs.¹⁶ The capital assets (such as: the building, land, equipment, etc.), also influence the facility budget, but to a lesser extent (exemptions may be found in some new by built nursing homes, or recently renovated ones). In that sense, the research shows that a nursing facility management capability to make right decisions represents the key component for controlling the facility operating costs.¹⁷

In order to understand the basic operating cost components, it is important to understand the breakdown of nursing facility services. The 2010 Prudential (a long-term care insurance company) research shows that the average daily cost of care for a private or a semiprivate nursing facility room includes the following services:¹⁸

1. room and board,
2. three meals per day,

15 - United States Government Accountability Office, "NURSING HOMES : Private Investment Homes Sometimes Differed from Others in Deficiencies, Staffing, and Financial Performance," (Report to Congressional Requesters, July 2011) <http://www.gao.gov/new.items/d11571.pdf> (accessed February 10, 2013), 14-16.
(hereafter cited as GAO. 2011 Report)

16 - GAO. 2011 Report, 14-16.

17 - GAO. 2011 Report, 14-16.

18 - The Prudential Insurance Company of America, "Long-Term Care Cost Study: Including consumer perceptions and cost trends by state and key metropolitan areas," (Prudential Research Report, 2010), <http://www.prudential.com/media/managed/LTCCostStudy.pdf> (accessed January 25, 2013), 6.
(hereafter cited as Prudential. LTC Report 2010)

3. assistance with activities of daily living (ADLs): bathing, eating, personal care, etc.,
and
4. the following services as needed:
 - house keeping,
 - 24-hours supervision,
 - skilled nursing care (including: administering medication, wound care, physical, speech and occupational therapy).

In Hawaii, the minimal program and staffing requirements are prescribed by the state's Department of Health. (These requirements are discussed in the following chapter of this thesis). However, it is up to each nursing facility to formulate its own business strategy, staffing policy and program needs. The nursing facility business strategies may significantly vary depending on the ownership type. The following categorizations of nursing facility ownership types are the most typical:¹⁹

1. The profit status categorization recognizes nursing facilities as for-profit, nonprofit, or government facilities. Research shows that approximately two-thirds of nationwide nursing facilities are for-profit businesses.²⁰ In Hawaii, for-profit facilities account for approximately one half of the all nursing facility businesses, while nonprofit and government businesses almost equally constitute the second half.²¹ The major goal of for-profit facilities is, as the name says, profit and its distribution among the owners and stock holders. Nonprofit facilities do not distribute revenues to private interests, and therefore qualify for favorable tax deductions.²²

19 - GAO. 2011 Report, 7-10.

20 - Ibid.

21 - American Health Care Association; "LTC Stats: Nursing Facility Operational Characteristics Report," (December 2012), http://www.ahcancal.org/research_data/oscar_data/Pages/default.aspx (accessed January 27, 2013), 4.

22 - GAO. 2011 Report, 7-10.

2.The number of owned nursing facilities operated by a single entity can be any of the following: just one, several, chain to even multiple chains. Studies show that approximately half of all nursing facilities are a part of some chain.²³

3.The nursing facility management can vary in terms of their involvement in the business. The management can operate and hold a state license, or contract a separate licensed entity to manage their nursing facility on a daily bases.²⁴

4.The nursing facility owners, or operators do not always own the real-estate. Sometimes leasing the real-estate works for owners who want to separate land ownership from the business ownership, which might help attract additional financing options, or protect against malpractice claims.²⁵

In terms of which business ownership model is the most successful in decreasing nursing facility operating costs, research prepared by Greg Arling, Richard H. Nordquist, and John A. Capitman provides helpful information. The researchers studied operating costs of 150 nursing homes in Virginia. They divided them into three ownership categories: chains, independent for-profit and public/nonprofit facilities. Out of these 150 nursing facilities, 64 were for-profit chains, 52 were for-profit independent facilities, 23 were nonprofit and 11 were government-sponsored (public) facilities.²⁶ Their research findings show that the for-profit nursing facilities act as "profit maximizers"²⁷, while nonprofit and government facilities try to maximize their size or quality of service.²⁸ The research depicts how each of these different nursing facility business models evolved different operating strategies. Independent for-profit nursing facilities seem to be the most adaptable to the market shifts. They have the ability to tailor their operating strategies to the current market demands. They can quickly respond to market shifts, such as changing

23 - Ibid.

24 - Ibid.

25 - Ibid.

26 - Greg Arling, et al., "Nursing Home Cost and Ownership Type: Evidence of Interaction Effects," *Health Services Research*, 1987 June; 22(2): 255–269. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1065434/> (accessed March 10, 2013), 259-260.

27 - Ibid, 264-268.

28 - Ibid.

demographics or shifts in preferred long-term care insurance types.²⁹ According to this research, public and nonprofit facilities have the highest daily operating costs. More than the half of these types of facilities have daily costs exceeding the Medicaid reimbursements. This research suggests that the emphasis for the nonprofit/public facilities is on the access to care.³⁰ Therefore, these nursing homes seem to subsidize their costs through donations, or tax revenues.³¹ Chain nursing facilities (for-profit) seem to do the best job in terms of managing their daily costs. They have the lowest operating cost of the three groups. They typically target Medicaid residents, even though Medicaid residents provide less income compared to the privately paying clients. But, Medicaid residents constitute the largest portion of the market, so chain nursing facilities use standardization of their services in order to reach out to a bigger market, yet control their operating costs using economies of scale. They control their expenses through uniform policies established for nursing, dietary, housekeeping and administrative services.³²

However, Greg Arling et al. study did not include hospital-based facilities, and did not separate public from nonprofit facilities because of incomplete cost data and small sample sizes. In their conclusions, the researchers state that independent for-profit facilities have the best combination of abilities to manage their operating costs and adjust their services to the current market needs. However, the researchers fear that without proper regulations these facilities would likely charge private-pay residents more than the Medicaid residents (to cross-subsidize for the costs above Medicaid reimbursement). This might be more emphasized in settings with high demand relative to the supply of nursing facility beds, like Hawaii.³³

29 - Ibid.

30 - Ibid.

31 - Ibid.

32 - Ibid.

33 - Ibid.

13.3 Nursing homes in Hawaii - occupancy and cost

Resident occupancy:

The American Health Care Association (AHCA), a non-profit federation of affiliate state health organizations, provides the Online Survey, Certification and Reporting (OSCAR) data system, maintained by the Centers for Medicare and Medicaid Services (CMS). This data system provides valuable information regarding nursing facilities in Hawaii, and all over the US. The data is collected by surveyors during inspections conducted at nursing facilities for the certification purposes in the Medicare and Medicaid programs.³⁴

OSCAR shows that in December 2012, the State of Hawaii had 47 nursing facilities, of which 51.1% were for-profit, 27.7% nonprofit and 21.3% owned by the government.³⁵ Of the total number of nursing facilities in Hawaii, 42.6% were independent, 31.9% were hospital-based, and 57.4% were part of two or more facilities owned or operated by a single company.³⁶ In terms of nursing facility certification, in December 2012 the State of Hawaii had 2.1% of facilities that were certified by the Medicare only, another 2.1% that were certified by the Medicaid only, and 95.7% that were both, Medicare and Medicaid certified.³⁷

OSCAR shows that these 47 nursing facilities in Hawaii, with the capacity of 4,092 beds, accommodated 3,739 residents in December 2012. This shows that the State nursing facility occupancy rate for Hawaii was 91.4%. In comparison, the nationwide state occupancy level was measured at 82.9%.³⁸

"An Overview of Long-Term Care in Hawaii", a report prepared for the Hawaii Long-Term Care Commission (in March 2011), associates the high occupancy rates of nursing facilities in Hawaii with the low supply of nursing beds in the State. The report bases this conclusion on the comparison between nursing home capacities and potential need ratios on the national and State

34 - American Health Care Association; "What is OSCAR Data?," (LTC Stats: OSCAR Data, 2013),

http://www.ahcancal.org/research_data/oscar_data/Pages/WhatisOSCARData.aspx (accessed January 31, 2013)

35 - American Health Care Association; "LTC Stats: Nursing Facility Operational Characteristics Report," (December 2012), http://www.ahcancal.org/research_data/oscar_data/Pages/default.aspx (accessed January 27, 2013), 4.

36 - Ibid., 3.

37 - Ibid., 5.

38 - Ibid., 6.

levels, for the year 2009. In other words, the researchers Janet O’Keeffe, RN, DrPH and Joshua M. Wiener, PhD, found that in the year 2009, the state of Hawaii had 43.4 nursing facility beds per 1,000 elderly individuals 75 years and older, while the national average was 88.9 nursing facility beds per 1,000 individuals aged 75 and over.³⁹ Furthermore, these researchers found that the low supply of nursing facility beds in Hawaii has several other consequences. Besides the high occupancy rates, in Hawaii many individuals with high levels of impairments can't get discharged from acute care hospital units because the existing nursing homes do not have the capacities to take them. The low supply of nursing beds also causes nursing homes in Hawaii to tend to serve more individuals severely impaired, compared to the national average. In the year 2009, the average nursing facility Activities of Daily Living (ADLs) index, that measures the need for assistance with ADLs, was 4.52 for Hawaii, and 4.02 for the national average. The report also states that Hawaii's nursing facility ADL index is the highest in the US.⁴⁰

These studies show that there is a need for more nursing beds in Hawaii. The national and the State of Hawaii population census data and projections, indicate that the number of the elderly (aged 65 and older) will continue to grow. Scientists are predicting that by the year 2030, there will be about 72.1 million (19%) older individuals in the US. The projected number is more than two times larger than in the year 2000.⁴¹ The rapid growth of the elderly population is projected for Hawaii as well. Statistics for the last 10 years show that Hawaii had an increase of almost 5% in the number of the elderly aged 65 and older, compared to only 1% increase of the same population for the rest of US.⁴² Many researchers speak about how the current trend of the growing elderly population is overlapping with other alarming trends, such as the lack of informal caregivers caused by widely dispersed families, fewer children, higher divorce rates, etc.⁴³

39 - Janet O’Keeffe and Joshua M. Wiener, "An Overview of Long-Term Care in Hawaii," (document prepared for Hawaii Long-Term Care Commission, March 2011), http://www.publicpolicycenter.hawaii.edu/documents/RTI_Overview_of_LTC_System-FINAL.pdf (accessed January 19, 2013), 1-5.

40 - Ibid.

41 - Administration on Aging; "Aging Statistics," http://www.aoa.gov/aoaroot/aging_statistics/index.aspx (accessed August 12, 2012);

42 - The Hawaii Association of Health Plans; "Aging Population," <http://www.hahp.org/content.php?sec=3&pag=20#b> (accessed February 02, 2013).

43 - Institute of Medicine, *Retooling for an aging America: Building the healthcare workforce*, (Washington, D.C.: The National Academies Press, 2008), 15-32.

Therefore, it seems logical that the number of long-term care institutions, especially nursing facilities, in Hawaii should follow the projected trends.

The Janet O'Keeffe and Joshua M. Wiener's research indicates two Hawaii-specific reasons that might be responsible for the lower supply of nursing facility beds. The first one is the high level of multi-generational households with a strong tradition of informal caregiving, which could significantly lower the demand for nursing facility services. The second is the high cost of construction and real estate in Hawaii, which practically prohibit expansions of existing and construction of new facilities.⁴⁴

Despite the trends in Hawaii to provide care in multi-generational households, some chronic and acute conditions require professional care (at least for some period of time). Alzheimer's disease is one of them. Most people afflicted with Alzheimer's are diagnosed after the age of 65.⁴⁵ Therefore, the number of Alzheimer's afflicted individuals is directly proportional to the growing number of elderly in Hawaii. The 2010 US Census data and the 2012 Alzheimer's Association report indicate that there are approximately 25,000 elderly individuals afflicted with Alzheimer's disease in Hawaii. This means that 1.8% of the total Hawaii population may be in need of nursing services.⁴⁶ OSCAR shows that 47 nursing homes in Hawaii have the capacity of 4,092 beds.⁴⁷ These statistics indicate the urgency of reinvestigating whether the current capacity in Hawaii will cover Hawaii's needs in the near-term future.

Cost and revenue relations:

The "Long-Term Care Cost Study" report prepared by the Prudential Insurance Company for 2010, shows that nursing facility care costs in the US for the year 2010 increased by more

44 - Janet O'Keeffe and Joshua M. Wiener, "An Overview of Long-Term Care in Hawaii," (document prepared for Hawaii Long-Term Care Commission, March 2011), http://www.publicpolicycenter.hawaii.edu/documents/RTI_Overview_of_LTC_System-FINAL.pdf (accessed January 19, 2013), 1-5.

45 - National Institute on Aging; "Alzheimer's Disease Genetics Fact Sheet," (Alzheimer's Disease Education and Referral Center, 2011) <http://www.nia.nih.gov/alzheimers/publication/alzheimers-disease-genetics-fact-sheet> (accessed September 10, 2012)

46 - State of Hawaii, The Department of Business, Economic Development & Tourism; "2010 Census Demographic Profile," http://hawaii.gov/dbedt/info/census/Census_2010/demographic (accessed February 3, 2013); Alzheimer's Association; "2012 Alzheimer's disease facts and figures," *Alzheimer's & Dementia* Volume 8, Issue 2 (2012) http://www.alz.org/downloads/facts_figures_2012.pdf (accessed August 10, 2012), 13-21

47 - American Health Care Association; "LTC Stats: Nursing Facility Operational Characteristics Report," (December 2012), http://www.ahcancal.org/research_data/oscar_data/Pages/default.aspx (accessed January 27, 2013), 4.

than 10% since the year 2008, and almost 50% since the year 2004. For instance, the average annual cost for a private room exceeded \$90,000 in the year 2010. This was found to be about 15% higher than for a semi-private room (\$247/day in private room, vs. \$215/day in semi-private room). Hawaii was recorded as the 6th most expensive State for private nursing facility rooms in 2010, with the highest jump from the 21st place recorded in 2008. Also, the average annual cost for a private room in Hawaii reached \$109,100.⁴⁸ (Figure XV and XVI)

Nursing Home Private Room — Average Annual Rates

Most Expensive States in 2010				Least Expensive States in 2010			
Rank 2008	Rank 2010	State	Average Cost	Rank 2008	Rank 2010	State	Average Cost
1	1	Alaska	\$232,100	51	51	Louisiana	\$55,900
2	2	Connecticut	\$143,800	44	50	Arkansas	\$55,800
3	3	New York	\$138,300	49	49	Missouri	\$57,700
4	4	Massachusetts	\$127,400	48	48	South Dakota	\$61,000
5	5	New Jersey	\$123,000	47	47	Oklahoma	\$61,300
21	6	Hawaii	\$109,100	50	46	Kansas	\$62,400
14	7	Washington, DC	\$108,400	43	45	Mississippi	\$65,700
13	8	Delaware	\$108,300	38	44	Alabama	\$66,000
10	9	Pennsylvania	\$102,600	45	43	Iowa	\$67,900
15	10	Washington	\$102,500	39	42	North Dakota	\$68,400

Figure XV, source: The Prudential Insurance Company of America, "Long-Term Care Cost Study: Including consumer perceptions and cost trends by state and key metropolitan areas," (Prudential Research Report, 2010), <http://www.prudential.com/media/managed/LTCCostStudy.pdf> (accessed January 25, 2013), 15.

Hawaii - Honolulu		
Nursing Home	Average Daily Rate	Average Annual Rate
Private Room	\$299	\$109,135
Semi-Private Room	\$283	\$103,295

Figure XVI, source: Ibid., 31.

Revenue:

Nursing facilities do not operate under free market conditions, because revenue sources are mostly governed/owned by Federal and State agencies. There are only three sources that pay for nursing home services: Medicaid, Medicare, and private-pay (consisted of residents'

48 - Prudential. LTC Report 2010, 15.

personal savings funds and private long-term insurances).⁴⁹ Therefore, nursing homes tailor their services to appeal to the market demands.⁵⁰ Some strategy examples include providing more amenities to attract more private-pay residents, or (in absence of private-pay residents) providing semi-private bedrooms for Medicare/Medicaid residents.⁵¹ Nevertheless, only a small minority of facilities can afford to ignore the largest portion of the market (i.e., Medicare/Medicaid) and focus on private-pay patients exclusively.⁵²

The situation in Hawaii is similar to the rest of the US. In the year 2010, the main source of revenue for nursing homes in Hawaii was Medicaid (67% of the total revenue). The rest of the revenue was composed of Medicare payments(11%), and private sources (22%).⁵³ The research report prepared by Janet O'Keeffe and Joshua M. Wiener shows that in 2008 Medicaid expenditures for nursing facilities in Hawaii amounted to \$221,667,411. Hence, nursing homes constitute the largest caregiving expenditure, accounting for 80.9% of all long-term care Medicaid expenditures - see Figure XVII.⁵⁴

49 - Greg Arling, et al., "Nursing Home Cost and Ownership Type: Evidence of Interaction Effects," *Health Services Research*, 1987 June; 22(2): 255–269. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1065434/> (accessed March 10, 2013), 256.

50 - Ibid.

51 - National Conference of State Legislatures; "A Guide to Long-Term Care for State Policy Makers: Guide to Nursing Home Culture Change," <http://www.ncsl.org/issues-research/health/archive-guide-to-nursing-home-culture-change.aspx> (accessed March 17, 2013)

52 - Greg Arling, et al., "Nursing Home Cost and Ownership Type: Evidence of Interaction Effects," *Health Services Research*, 1987 June; 22(2): 255–269. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1065434/> (accessed March 10, 2013), 256.

53 - Kaiser Family Foundation / statehealthfacts.org, "Hawaii: Distribution of Certified Nursing Facility Residents by Primary Payer Source, 2010," (Providers & Service Use)

<http://www.statehealthfacts.org/profileind.jsp?ind=410&cat=8&rgn=13> (accessed February 10, 2013)

54 - Janet O'Keeffe and Joshua M. Wiener, "An Overview of Long-Term Care in Hawaii," (document prepared for Hawaii Long-Term Care Commission, March 2011), http://www.publicpolicycenter.hawaii.edu/documents/RTI_Overview_of_LTC_System-FINAL.pdf (accessed January 19, 2013), 11.

Medicaid Long-Term Care Expenditures for Older People and Younger Persons With Physical Disabilities in Hawaii, by Service, 2008

Service	Expenditure (\$)	Percentage of Total Long-Term Care
Nursing Homes	\$221,667,411	80.9
Personal Care	\$0	0.0
Home Health	\$654,464	0.2
Home and Community-Based Services Waiver	\$50,945,892	18.6
Targeted Case Management	\$782,226	0.3
Total Long-Term Care	\$274,049,993	100.0

Figure XVII, source: Janet O’Keeffe and Joshua M. Wiener, "An Overview of Long-Term Care in Hawaii," (document prepared for Hawaii Long-Term Care Commission, March 2011), http://www.publicpolicycenter.hawaii.edu/documents/RTI_Overview_of_LTC_System-FINAL.pdf (accessed January 19, 2013),11.

13.4 The minimum program requirements nationwide

The minimum program requirements for nursing facilities are defined by the Federal and State laws. Nursing facilities in the US can operate only if they are in accordance with the Federal and State requirements. Both of these governing bodies are promulgating compliable sets of regulations intended to ensure the protection of health, welfare and safety of residents and all users of nursing facilities.⁵⁵ Regulations may slightly differ from state to state, because states are using the Federal law as guidance, but are defining specific regulations in order to address concerns of their local environments.⁵⁶

In the year 2011, The University of Minnesota department for Health Policy and Management has completed a comparative analysis of nursing facility regulations for all 50

55 -Electronic Code of Federal Regulations, U.S. Government Printing Office; "Section 483.70 - Physical environment," in Part 483 - Requirements for States and Long Term Care Facilities, <http://www.gpo.gov/fdsys/pkg/CFR-2011-title42-vol5/pdf/CFR-2011-title42-vol5-sec483-70.pdf> (accessed February 11, 2013), 64. (hereafter cited as Federal Regulations. Physical);

Department of Health, State of Hawaii; "Title 11, Chapter 94.1: Nursing Facilities: Hawaii Administrative Rules," (April 13, 2012), <http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-94.1.pdf> (accessed February 11, 2013), 3.

56 - Health Policy Management, University of Minnesota; "Physical Environment: Comparison of State Requirements" (NH Regulations Plus, last modified on March 19, 2012), <http://www.hpm.umn.edu/NHRegsPlus/NH%20Regs%20by%20Topic/Topic%20Physical%20Environment.html#statecompare> (accessed January 27, 2013)

states. The research was headed by Rosalie A. Kane, PhD and Lois J. Cutler, PhD. According to their analysis, all nursing facility regulations/requirements fall into one of the following five categories:⁵⁷

1. Resident Room and Bath:

- resident bedroom,
- bathroom,
- storage,
- doors and locking,
- windows,
- new construction.

2. Nursing Unit:

- nurse's station,
- specialized care units,
- resident call system,
- tub and shower room,
- new construction.

3. Facility Wide Features:

- housekeeping,
- laundry and maintenance,
- corridors,
- floors and signage,
- lighting,
- noise,
- temperature,
- HVAC and odors,

57 - Ibid.

- body holding room,
- outdoor space
- new construction.

4. Dining and Lounge Space:

- square footage requirements,
- lounge space and common areas,
- dining space,
- food preparation and kitchen areas,
- new construction.

5. New Construction Application Process and Waivers.

- Application Process,
- Waivers.

The extended literature review of this thesis (presented in previous chapters) mostly covers the resident room/bath and the nursing unit areas. Therefore, the goal in the forthcoming subsection is to specify the missing pieces: the programming information for the facility wide amenities, dining, administration and other service areas.

13.5 The Hawaii DOH nursing facility program and staff requirements

In Hawaii, the Department of Health (DOH) is in charge of licensing nursing facilities. The license is usually issued for a one year period. During that period of time, the Department has to conduct unannounced inspections for the purpose of further relicensing.⁵⁸ The State of Hawaii Department of Health in their program requirements requires the following services and staff for nursing facilities:⁵⁹

§11-94.1-36 Admission, transfer and discharge:

The state regulations require that nursing facilities provide written policies and procedures to staff, residents and the public. These policies should regulate all services that the facility provides, and all procedures regarding the admission, transfer and discharge of residents.

§11-94.1-37 Social work services:

The DOH regulations require the social work services to be provided to each resident. Depending on the resident's needs, they require that the physical, mental and psychological help service be offered. However, there are no clear design implications that indicate whether there are offices, or some other type of spaces, dedicated to these service providers. Also, the regulations do not specify the employment type; whether the social workers should be contracted, or fulltime/part-time employed.

§11-94.1-38 Activities:

The DOH requires that the facility provides age-appropriate activities directed by an activity professional. This regulation also leaves unclear the spatial requirements, as well as the hiring status of the required activity professional personnel (permanent position, half-time, or contracted). It seems that it is left to the nursing facility management to determine how to

58 - Department of Health, State of Hawaii; "Title 11, Chapter 94.1: Nursing Facilities: Hawaii Administrative Rules," (April 13, 2012), <http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-94.1.pdf> (accessed November 10, 2012), 3. (hereafter cited as Hawaii DOH. Rules).

59 - Ibid., 26-38.

implement this requirement. For instance, it may happen that some facilities have separate, specially designed activity spaces, while others have so-called multi-purpose rooms that serve as activity areas throughout the day. However, Lois J. Cutler, PhD (research associate at the Division of Health Policy and Management, at the School of Public Health, University of Minnesota), recommends avoiding multipurpose rooms, because of their impracticality when it comes to shifting furniture or equipment that supports the necessary activities.⁶⁰

§11-94.1-39 Nursing Services:

This regulation specifically requires the fulltime employment of, at least one registered nurse for a day shift (8 hours), and at least one licensed nurse for the evening and night shifts. It is left up to each nursing facility to determine the total number and qualifications of the direct care staff, depending on the residents' numbers and needs. The DOH also requires that one of the registered nurses becomes designated as the nurse administrator (or director of nursing). This person is envisioned to be in charge of all nursing services.⁶¹

§11-94.1-40 Dietary services:

The DOH regulations allow for the facility to contract an outside food supplier. The transportation, storing and serving of food must be approved by a dietitian. Besides the description of the nutritional content, the frequency and the number of served meals, the requirements indicate that competent personnel should be hired as paid feeding attendants. Residents' physicians, or Advanced Practice Registered Nurses are in charge of preparing the diets. Only when a resident needs a special diet it has to be planned by a dietitian.⁶²

§11-94.1-41 Storage and handling of food:

The DOH requirements only give general guidance for storage and handling of food. The regulations mention above ground, ventilated storage for dry and staple foods, refrigerators for

60 - Lois J. Cutler, "Nothing is Traditional about Environments in a Traditional Nursing Home: Nursing Homes as Places to Live Now and In the Future," (paper prepared for the Creating Home in the Nursing Home: A National Symposium on Culture Change and the Environmental Requirements, Washington, D.C., April 3, 2008.), <http://www.pioneernetwork.net/Data/Documents/Cutler-Nothing-is-Traditional-Paper.pdf> (accessed November 10, 2012), 11.

61 - Hawaii DOH. Rules, 26-38.

62 - Ibid.

perishable foods, hand-washing facilities near the working areas, and similar.⁶³ However, there are no spatial or organizational indicators.

§11-94.1-42 Physician services:

Regular physician visits are required for all residents. Residents must select their own physician themselves, or through a legal guardian or surrogate. Regulations require that nursing facilities provide all necessary arrangements for all physician, physician assistant or APRN visits. Therefore, even though physicians are not hired by a nursing facility, they should have an examination office (or resident's private bedroom) available when paying visits to residents. That specific office could be shared with a medical director, social worker, dietitian, pharmacist or any other contracted or part-time clinical personnel. The frequency and necessity of physician visits is precisely determined by the state DOH regulations. For instance, services required are: physical examinations, immunizations, TB testing, and similar.

§11-94.1-43 Interdisciplinary care process:

Each resident is required to have a comprehensive assessment completed by an interdisciplinary team, at least once a year. The state requirements do not define built environment requirements. However, a shared conference room, or maybe even an empty enclosed dining area seems suitable for interdisciplinary team meetings

§11-94.1-44 Specialized rehabilitation services:

The state regulations require that nursing facilities provide rehabilitation services according to the needs of each resident. Occupational therapy, speech therapy and physical therapy are required by law. The law states that the services should be provided either by qualified staff, or by qualified outside resources. Furthermore, the law requires that nursing facilities provide adequate space, equipment, supplies, facilities and other necessary resources. However, the quantities of staff and space are not specified.

§11-94.1-45 Dental services:

⁶³ - Ibid.

The facility has to make all the necessary arrangements to enable residents to obtain the necessary dental care. Each resident will choose his/hers dentist, and the nursing facility will arrange appointments and transportation, if necessary. Some nursing facilities even have a dentist office in the facility. However, the state regulations do not specify whether the facility has to provide the office for dental services.

§11-94.1-46 Pharmaceutical services:

The law requires that each nursing facility employs, or contracts a licensed pharmacist. The pharmacist has to be in charge of ordering, storing, administering, disposing and recordkeeping of drugs and biologicals. The law doesn't specify whether the facility pharmacist should have his own office, but it specifies that the facility should have an appropriate drug storage.

§11-94.1-47 Adult day health services:

The state law requires that the adult day health service clients' medical records be stored separately from nursing facility residents' records. The space and staff for adult care services should be additional to the nursing facility requirements. The law specifies that 20 square feet per adult care person be added in dining areas, 30 square feet per person in recreation areas, and one toilet per each eight persons. Nursing facilities usually separate the adult day health function entirely from the rest of the facility.

The state of Hawaii DOH regulations specifically require that nursing facilities in Hawaii employ a particular, minimal number of the certain direct care staff positions. However, they are leaving the decisions about the number of the fulltime, part time and contracted positions to the each facility. Therefore the numbers of direct care staff, aide staff and other supplemental service staff may drastically vary from one facility to another. As explained in Section 13.2 of this thesis, these numbers depend mostly on the nursing facility ownership type. The following table (Figure XVIII) illustrates the state of Hawaii DOH regulations in terms of the minimum staffing requirements for the licensed nursing homes.

State of Hawaii Program Requirements	staff position	in-house services (facility expenditures)			outside services
		fulltime #	part-time #	contract #	#
1 Social work services	social worker	(either-or) REQUIRED	(either-or) REQUIRED	(either-or) REQUIRED	NOT SPECIFIED
2 Activities	activity professional	(either-or) REQUIRED	(either-or) REQUIRED	(either-or) REQUIRED	NOT SPECIFIED
3 Nursing services	registered nurse (RN)	1/day shift	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED
	licensed nurse (LN)	1/ evening and night shifts	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED
	certified nursing assistants (CNA)	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED
	nurse administrator (RN)	1 REQUIRED	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED
4 Dietary services	dietary manager-dietitian	(either-or) REQUIRED	(either-or) REQUIRED	(either-or) REQUIRED	NOT SPECIFIED
5 Storage and handling of food	staff	(either-or) REQUIRED	(either-or) REQUIRED	(either-or) REQUIRED	NOT SPECIFIED
6 Physician services	physician/physician assistant/APRN	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED	1/resident
7 Specialized rehabilitation services	occupational/physical/speech therapy specialist	(either-or) REQUIRED	NOT SPECIFIED	(either-or) REQUIRED	NOT SPECIFIED
8 Dental services	dentist	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED	1
9 Pharmaceutical services	licensed pharmacist	NOT SPECIFIED	NOT SPECIFIED	1	NOT SPECIFIED
	licensed staff for med. Administration (a nurse or physician)	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED
10 Adult day health services	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED	NOT SPECIFIED

Figure XVIII, Source: Department of Health, State of Hawaii; "Title 11, Chapter 94.1: Nursing Facilities: Hawaii Administrative Rules," (April 13, 2011), <http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-94.1.pdf> (accessed November 10, 2012), 26-38.; Med-QUEST; " Covered Services," http://www.med-quest.us/eligibility/EligPrograms_MFFS.html (accessed January 27, 2013)

13.6 The modern nursing facility - "The culture change movement"

The culture change in nursing facilities overview:

Even though The Nursing Home Reform Act of 1987, established nationwide nursing facility quality standards and residents' rights, serious concerns remain regarding issues of living conditions in nursing facilities.⁶⁴ As the consequence, the "culture change movement" was established to help facilities transform from institutional to home-like environments.⁶⁵

The culture change movement was established over a decade ago, in 1997.⁶⁶ It was formed by a small group of long-term care reform leaders from around the US. They worked together to propose solutions to fundamentally change the practices and values in long-term care facilities. Later on, in the year 2000, these reformers established the Pioneer Network, an organization that continues to promote the culture change in nursing facilities nationwide.⁶⁷ Today, the Pioneer Network is supported by organizations such as: Alzheimer's Association, American Health Care Association, The Green House Project, Sodexo, and many others.⁶⁸

Since the culture change model gained momentum over the past decade, the extent to which nursing facilities have adopted the new model remains unknown. The report prepared by the Commonwealth Fund 2007 National Survey of Nursing Homes, presents the collected data that describes the level of penetration of the culture change movement principles and "resident-centered care"⁶⁹ practices. The survey was conducted nationwide, with 1,435 nursing facilities surveyed in the period between February and June 2007.⁷⁰

64 - Michelle M. Doty, Mary Jane Koren, and Elizabeth L. Sturla, "Culture Change in Nursing Homes: How Far Have We Come? Findings From The Commonwealth Fund 2007 National Survey of Nursing Homes," (the 2007 National Survey of Nursing Homes Report prepared for the Commonwealth Fund, May 9, 2008.)

<http://www.commonwealthfund.org/Publications/Fund-Reports/2008/May/Culture-Change-in-Nursing-Homes--How-Far-Have-We-Come--Findings-From-The-Commonwealth-Fund-2007-Nati.aspx> (accessed March 10, 2013)
(hereafter cited as The Commonwealth Fund. 2007).

65 - Ibid.

66 - Pioneer Network; "Pioneer Network," <http://www.pioneernetwork.net/AboutUs/About/> (accessed March 10, 2013)

67 - The Massachusetts Advocates for Nursing Home Reform; "What is the history of the Culture Change Movement?," (MANHR, 2008), http://www.manhr.org/faq_list.aspx?cat_id=2&# (accessed March 10, 2013)

68 - The Pioneer Network; "2012 National Partners," <http://www.pioneernetwork.net/AboutUs/NationalSponsors/> (accessed March 10, 2013)

69 - The Commonwealth Fund. 2007

70 - Ibid.

The 2007 Commonwealth Fund survey findings indicate positive results regarding the potential for deep and systematic changes in long-term care practices and values. If the awareness of a problem is the first step towards implementing the change, the US long-term care industry has taken the correct first step. The report states that in 2002, only a few nursing facilities were familiar with the term "culture change", while in 2007 it is recognized by almost all long-term care providers.⁷¹

Furthermore, the report analyzed how the culture change implementation affected various operating aspects of nursing homes. The findings showed positive correlations between culture change initiatives and staff retention, operation efficiencies, occupancy rates and competitiveness on the market.⁷²

The survey categorized participating nursing facilities into three categories: culture change adopters, culture change strivers, and traditional nursing homes. The following graph (Figure XIX) shows the distribution of surveyed facilities between the three categories, and explains how these three categories were determined.

71 - Ibid.

72 - Ibid.

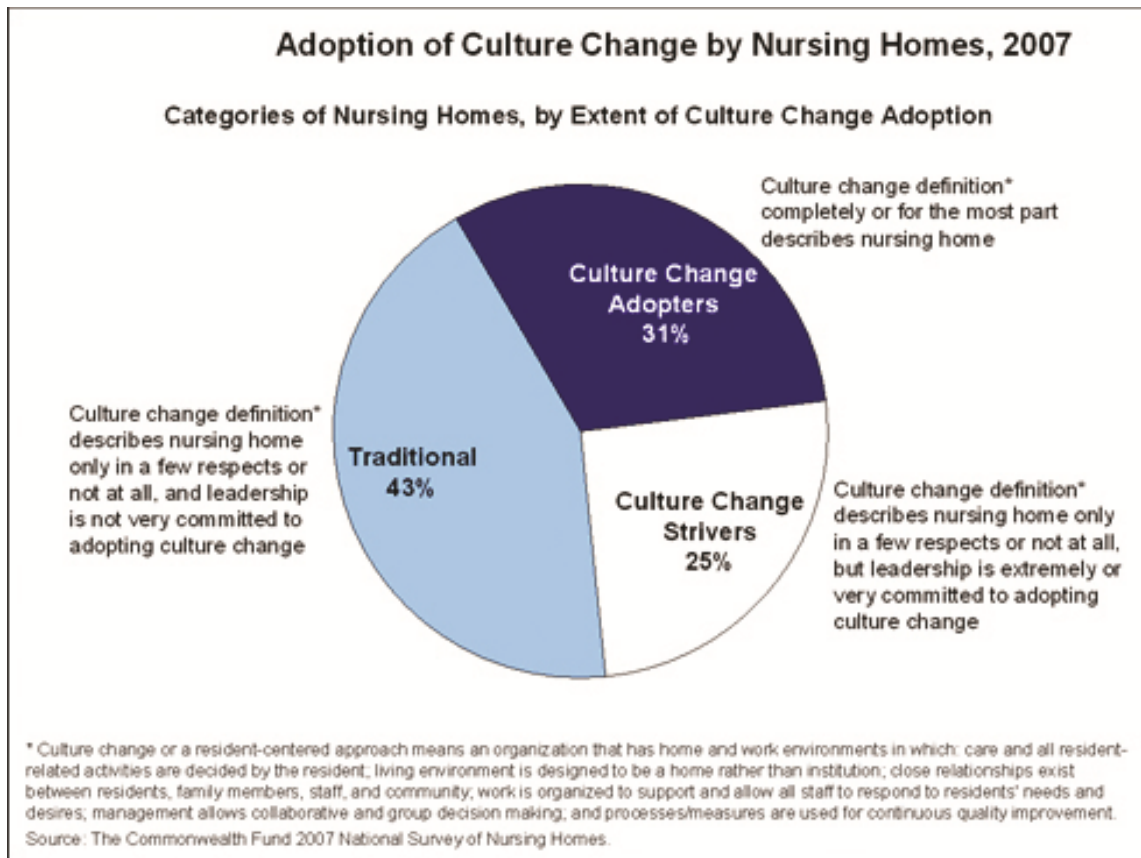


Figure XIX, Source: Michelle M. Doty, Mary Jane Koren, and Elizabeth L. Sturla, "Culture Change in Nursing Homes: How Far Have We Come? Findings From The Commonwealth Fund 2007 National Survey of Nursing Homes," (the 2007 National Survey of Nursing Homes Report prepared for the Commonwealth Fund, May 9, 2008.) <http://www.commonwealthfund.org/Publications/Fund-Reports/2008/May/Culture-Change-in-Nursing-Homes--How-Far-Have-We-Come--Findings-From-The-Commonwealth-Fund-2007-Nati.aspx> (accessed March 10, 2013) (hereafter cited as The Commonwealth Fund. 2007).

In terms of how far the surveyed facilities went in order to implement all culture change initiatives regarding resident care, staff culture, and physical environment, the results vary broadly. While resident-centered care approaches seem to be the easiest to implement in comparison to other culture change initiatives, renovating physical spaces in order to allow for privacy, individuality and better quality of life for all users, seem to be the hardest to implement. The report states that even those nursing facilities, categorized as the culture change adopters, had difficulty transforming their physical environments into home-like environments. These transformations are indeed difficult because (according to the report) they require creating smaller independent home dwellings with 25 or fewer residents. In addition, the transformations may

require repositioning the kitchen, dining and living areas to be centrally located with respect to the private bedrooms (which in turn must have full private bathrooms).

Furthermore, the survey also reveals that the number of implemented culture change initiatives directly affected increases in occupancy rates, decreases in operational costs and improvements in competitive market positions (see Figure XX).⁷³

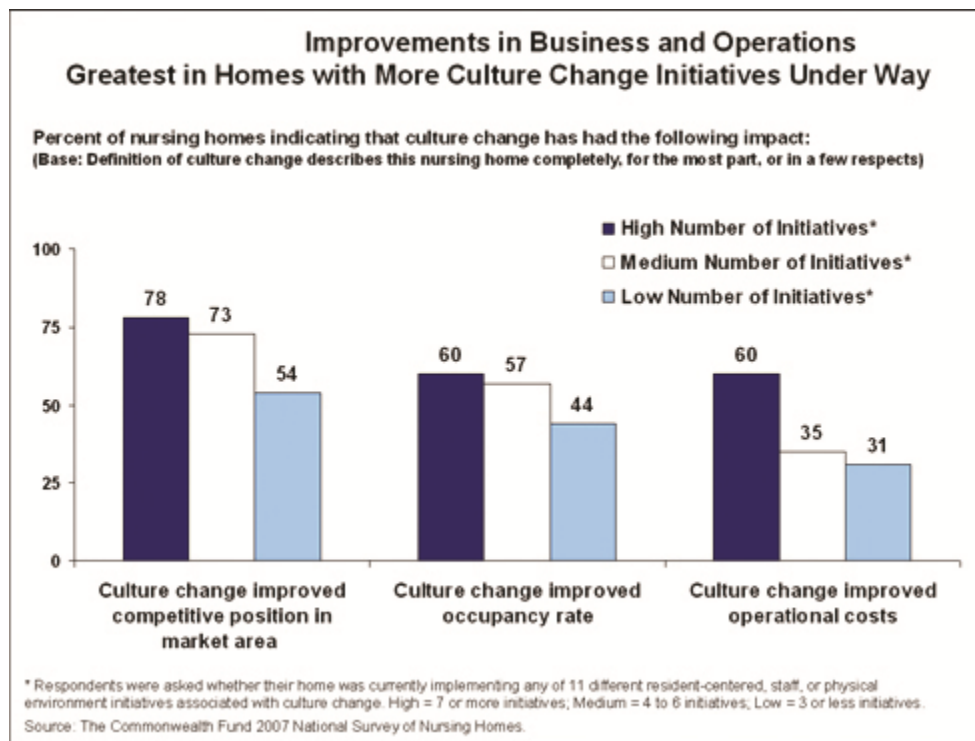


Figure XX, Source: The Commonwealth Fund. 2007

The Commonwealth Fund 2007 survey report concludes that many of the surveyed nursing facilities are aware of the "culture change" movement and principles. However, the awareness of this transformative concept exists, the actual progress of staffing and physical transformation is recorded as slow. The report emphasizes the role of the committed nursing facility leadership in order for all the initiatives to be truly adopted.

73 - Ibid.

The Green House Model - the culture change nursing facility example:

The Green House (GH) model is one of the growing culture change practices in the US.⁷⁴ The movement was founded by Gerontologist Dr. William Thomas, the founder of two other movements that also promote long-term care reform - The Eden Alternative (an international nonprofit organization)⁷⁵, and the online Changing Aging movement (a multi-blog platform)⁷⁶. The Green House model stands out among other culture change practices in the US by staying economically efficient, while giving the consumers what they specifically want and need.⁷⁷ Since May 2012, the National Green House movement enlisted 134 open homes (freestanding, or as a part of retirement communities), and 106 homes under development nationwide.⁷⁸

The article "Financial Implications of the Green House Model", published in *The Seniors Housing and Care Journal*, summarizes several recent studies that show how GH nursing facilities are cost competitive compared to traditional facility models, as well as to the other culture change models, while providing better quality of life for the residents. Capital costs for Green House model facilities are found to be equal to other similar culture change organizations, they are rated to be higher than for traditional facilities.⁷⁹ This fact actually represents the most obvious reason why the culture change movement is experiencing slow rate of implementation. Even though the 2007 Commonwealth Fund survey findings indicate that many nursing facilities can be categorized as culture change strivers, it seems that the prohibitively costly redesign of the existing physical environment is delaying the process of true change. The change inertia is

74 - Hollinger-Smith, Linda, man. editor, "Financial Implications of The Green House Model," *The Seniors Housing and Care Journal*, Vol.19, No. 1 (2011): 1–22. http://blog.thegreenhouseproject.org/wp-content/uploads/2011/09/NIC_2011_SHCJ_GreenHouseArticle.pdf (accessed March 15, 2013), 4.

(hereafter cited as The GH model. 2011 article)

75 - The Eden Alternative; "The Eden Alternative - Fact Sheet," http://www.edenalt.org/images/stories/about_eden/EDA_FactSheet_FINAL_2.pdf (accessed March 15, 2013)

76 - Changing Aging; "Dr. Bill Thomas - Founder," (Changing Aging, 2013), <http://changingaging.org/about/> (accessed March 15, 2013)

77 - The Green House Model; "Home Economics - The Business Case for The Green House Model," <http://thegreenhouseproject.org/doc/21/business-case-full-web.pdf> (accessed March 16, 2013)

78 - The Green House Model; "Evaluating The Green House Model," <http://thegreenhouseproject.org/doc/13.pdf> (accessed March 16, 2013)

79 - The GH model. 2011 article, 3.

counteracted by the better quality of residents' lives, which attracts more revenue (from satisfied residents and their families), and increases staff efficiency.⁸⁰

The mission of the GH nursing facility model is to offer "... an alternative to traditional nursing home practices, significantly redesigning the philosophy of life and care, physical environment, and operational approach within state and federal requirements..."⁸¹ Basically, the GH model promotes three levels of facility redesign initiatives: Philosophy redesign, Environmental redesign, and Organizational redesign.⁸²

Philosophy redesign involves (re)development of nursing homes into small scale communities that can act as independent self-directed units. In these small-scale communities, staff members can truly get to know each resident, and are able to honor residents' choices and needs. Hence, GH communities are capable of providing private living spaces for normal life activities and daily needs of residents.⁸³

Organizational redesign includes major staff reorganization. The biggest change includes the staffing numbers going in favor of certified nursing assistants (CNAs), called "Shahbazim".⁸⁴ The responsibilities of Shahbazim go beyond the basic care-giving tasks. They act as home managers and care-giving partners to residents.⁸⁵ They also assume responsibilities such as doing laundry, house cleaning and cooking.⁸⁶ The Shahbazim are supervised by a nursing facility administrator, called the Guide, who receives additional training in coaching and managing skills. There is also the clinical support team (CST): physician, registered nurses (RN), licensed practical nurse (LPN), social workers, dietician, etc.⁸⁷

Environmental redesign includes an independent, true home environment for 10 to 12 residents. The center of a home should be an open-concept kitchen, with dining and living areas.

80 - Ibid., 19-21.

81 - Ibid., 4.

82 - Ibid.

83 - Ibid., 5

84 - Ibid.

85 - Ibid.

86 - Ibid., 6

87 - Ibid., 5

Outdoor space should be available to all residents. Each resident should have a private room with a full bathroom. That is, the design goals depict a true home residence for a small community.⁸⁸

Another major topic of the article addresses the economical viability of the GH model. For that reason, the editors collected several recent research studies that investigated the successfulness of the GH model.

One of the presented findings was from the research performed by Siobhan S. Sharkey, et al., titled "Frontline caregiver daily practices: A comparison study of traditional nursing homes and The Green House Project sites.", originally published by the *Journal of the American Geriatrics Society* (Volume 59, Issue 1, 16 DEC 2010). The research aimed to analyze and describe differences between the two nursing home model types in terms of overall staffing, direct and indirect care time per resident day, and time of staff interacting with residents.⁸⁹ The researchers surveyed and compared the operations of 14 GH homes and 13 traditional type facilities with comparable community populations. Their report shows that, compared to the traditional facilities, surveyed GH model adopters have:⁹⁰

- lower overall staff time per resident per day (including all services: nursing, laundry, dietary, housekeeping, etc.), (it was estimated 5.6 hours per resident day (hprd) vs. 5.9 hprd in traditional institutions),
- higher direct care hours (approximately 22% more than in traditional homes),
- greater engagement of CNAs with residents, (CNAs were spending more time with residents in GH homes mainly during additional activities such as meal preparation, housekeeping, and similar), and
- reduced administration and clinical staff leadership time. (In GH facilities, leadership is distributed and CNAs are empowered with home management roles. Researchers recorded that this reduced administration and clinical staff time by 68%.)

88 - Ibid.

89 - Ibid.;

Wiley Online Library; "Journal of the American Geriatrics Society," <http://onlinelibrary.wiley.com/doi/10.1111/j.1532-5415.2010.03209.x/full> (accessed March 16, 2013)

90 - The GH model. 2011 article, 5-6.

The article also cites another research titled "Green House administration and organizational staffing.", prepared by Chi Partners (a long-term care and housing consulting firm).⁹¹ Chi Partners studied the average staffing needs in GH and traditional facilities and compared their staffing schemes and personnel costs.⁹² Because nursing homes can be different on many levels - e.g., size (number of residents), business structure (for-profit, nonprofit, government), number of service lines (independent, or part of the larger organization such as retirement-community, or hospital), etc., the challenge for this research was to select a representative set of facilities to compare, and to subsequently classify the information appropriately. Therefore, the surveyed sample included five GH adopters and two traditional nursing facilities. These selected five GH facilities ranged in size from a community of four homes with 40 residents (10 residents per home), to a community of 16 homes with 192 residents (12 residents per home). They were all without a dedicated short-stay rehabilitation unit. Four facilities had adopted nonprofit business models, while one was for-profit. Therefore, to ensure comparability, the two selected traditional facilities were both nonprofit facilities without a dedicated short-stay rehabilitation unit and with 59 and 99 beds, respectively. Researchers performed site visits, interviews with CFOs, staff members, administration and other support positions in order to clarify staffing patterns. From these findings they created tables that show:⁹³

1. Comparison of characteristics for participating facilities,
2. Comparison of full time equivalent (FTE) staff requirements for each job position,
3. Comparison of personnel costs for both model types (GH vs. traditional).

(These results are shown in Figures XXI-XXIII, respectively.)

91 - Ibid, 7.;

Chi Partners; " Green House and Culture Change," <http://www.chipartners.net/> (accessed March 20, 2013)

92 - The GH model. 2011 article, 7.

93 - Ibid., 7-11.

Table 1. Sample Characteristics of Participating Nursing Home Sites – 2009.									
	Green House Sites						Traditional Sites		
	GH Site 1	GH Site 2 ^a	GH Site 3 ^a	GH Site 4	GH Site 5	GH Average	Trad- itional Facility 1	Trad- itional Facility 2	National Median ^g (n = 12,643)
Number of Beds	60	60	192 ^b	40	48	80	99	59	100
Type of Ownership	Non-profit	For Profit	Non-profit	Non-profit	Non-profit	n/a	Non-profit	Non-profit	n/a
Occupancy ^c	97%	n/a	99%	93%	96%	96%	98%	96%	88%
Medicare% ^d	8%	11%	4%	3%	4%	6%	10%	7%	12%
Avg. Survey Health Deficiencies Last 3 Inspections (per bed) ^e	.05	n/a	.016	.025	n/a	.03	.04	0	n/a
Direct Care Staff Turnover ^f	19%	n/a	21%	9%	n/a	16%	23%	17%	n/a
^a Data are only available from 4Q/2009. ^b Green House Facility 3 had 100 beds open when the study was conducted. ^c Self-reported for The Green House homes (medicare.gov data do not disaggregate Green House homes from the traditional home on campus); as reported by medicare.gov for the traditional facilities ^d Reported by EQUIP for Quality for Green House Site 3, self-reported for all other Green House homes (medicare.gov data do not disaggregate Green House homes from the traditional home on campus); reported by medicare.gov for the traditional facilities ^e Self-reported for The Green House homes for time periods available between 2007 and 2009 and as reported by medicare.gov for the traditional facilities ^f Self-reported for The Green House homes, reported by calquality.org for the traditional facilities ^g Medicare.gov									

Figure XXI, Source: Hollinger-Smith, Linda, man. editor, "Financial Implications of The Green House Model," The Seniors Housing and Care Journal, Vol.19, No. 1 (2011): 1–22.
http://blog.thegreenhouseproject.org/wp-content/uploads/2011/09/NIC_2011_SHCJ_GreenHouseArticle.pdf (accessed March 15, 2013), 9.

Table 2. FTE Comparisons Traditional Facilities and The Green House Model. ^a				
	Traditional 59-Bed Facility (@97% occ)	60-Bed Green House Recommendation (@97% occ)	Traditional 99-Bed Facility (98% occ)	100-Bed Green House Recommendation (@98% occ)
Administration	6.2	4.7	11.9	8.8
LPNS and RNs	8.9	11.2	14.0	18.7
CNAs	26.6	42.0	42.2	70.0
Housekeeping	5.6	0.8	8.4	1.4
Laundry	1.0	0 ^b	2.8	0 ^b
Dietary	5.7	0.6	15.0	1.0
Dietician	0.4	0.4	1.0	0.6
Life Enrichment	3.6	0.6	2.0	1.0
Social Work	1.0	0.6	1.5	1.0
Staff Education	0.6	0.6	1.0	1.0
Other	2.0	0.8	3.0	1.3
Total for Project	61.6	62.3	102.8	104.8
Total per Bed	1.04	1.04	1.04	1.05
Total per Resident	1.08	1.07	1.06	1.07
<i>a These recommendations assume 97% and 98% occupancy levels for the purposes of comparison to the traditional facilities.</i>				
<i>b The Green House Project recommends that all laundry is washed in the homes</i>				

Figure XXII, Source: Hollinger-Smith, Linda, man. editor, "Financial Implications of The Green House Model," The Seniors Housing and Care Journal, Vol.19, No. 1 (2011): 1–22.
http://blog.thegreenhouseproject.org/wp-content/uploads/2011/09/NIC_2011_SHCJ_GreenHouseArticle.pdf (accessed March 15, 2013), 10.

Table 3. Personnel Cost Comparison Traditional Facilities and the Green House Model.						
	59-Bed Traditional Facility	60-Bed Green House Site	% Change	99-Bed Traditional Facility	100-Bed Green House Site	% Change
Total Personnel Costs	\$2,039,562	\$2,046,780	n/a	\$3,345,367	\$3,448,041	n/a
Per-Bed Personnel Costs	\$34,569	\$34,113	-1.34%	\$33,792	\$34,480	2.00%

Figure XXIII, Source: Hollinger-Smith, Linda, man. editor, "Financial Implications of The Green House Model," The Seniors Housing and Care Journal, Vol.19, No. 1 (2011): 1–22.
http://blog.thegreenhouseproject.org/wp-content/uploads/2011/09/NIC_2011_SHCJ_GreenHouseArticle.pdf (accessed March 15, 2013), 11.

Figure XXII shows the shift in dedicated staff time between traditional and GH nursing facility models. The presented data matches those found in the previous research (Sharkey et al., in 2010), but gives more detailed information. The chart shows how the overall staffing numbers are similar for both model types, and in both case studies (the 60-bed facility case study, and the 100-bed facility case study). However, the staffing numbers are shifted, and distributed greatly in favor of CNAs in GH model facilities. This is balanced out by a reduction of staff positions for administration, housekeeping, laundry, dietary, life enrichment, social work and other services in GH homes. The staff decreases (compared to the traditional model type) are mainly possible because CNAs perform some (or all) additional services in GH homes. However, the physical environment design, along with the small community of residents are also counted as important influences that enable certain staff number reductions. For instance, reduced numbers of social workers in GH homes are enabled by diffusing issues, such as roommate concerns, complaints about food, or lost clothing, that social workers typically address. This is directly related to the fact that the built environments in GH homes support better life qualities by providing single bedrooms for all residents, opening up the kitchen to everybody, and offering other home-like features.⁹⁴

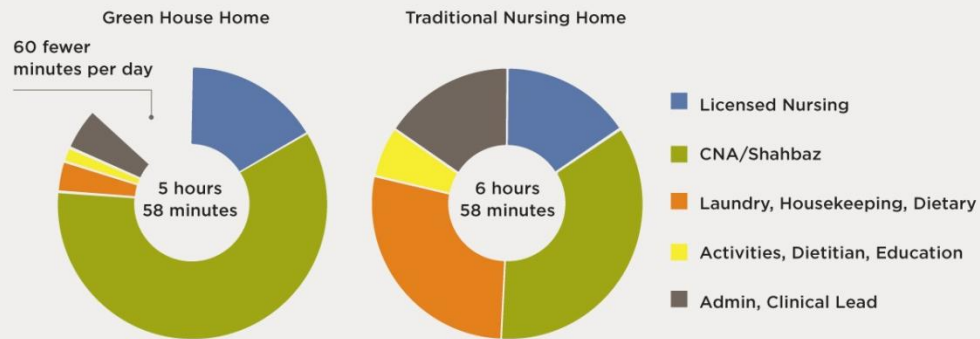
Figure XXIII shows the personnel cost comparison between the two model types. The chart aims to show how the GH model in practice can be price-competitive with other traditional facilities, while providing better quality of life to its residents. The researchers (Siobhan S. Sharkey, et al.) applied 2009 wages (taken from salary.com and payscale.com websites) to their FTE calculations in figure XXIII.⁹⁵

The Green House Project web-publication titled "Home Economics: The Business Case for The Green House Model.", published in 2012, further explains the financial sense of the GH model of care. The following graphs (Figure XXIV) illustrate how lower overall staff hours per resident day and higher direct care hours are achieved in GH facilities.

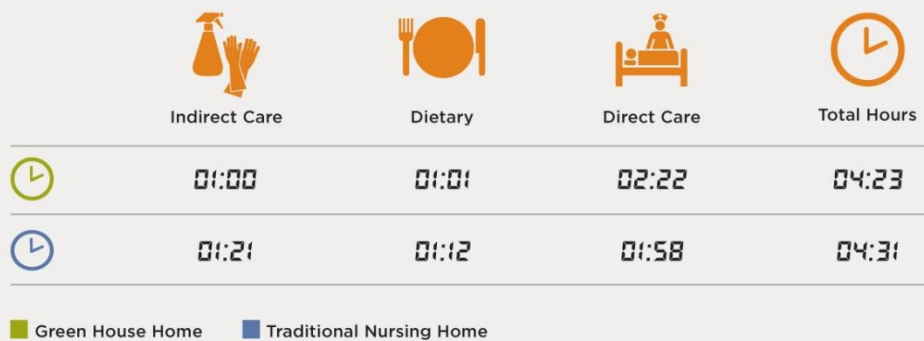
94 - Ibid.

95 - Ibid.

AVERAGE OVERALL STAFF TIME PER RESIDENT



AVERAGE SHAHBAZ/CNA TIME PER RESIDENT



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Figure XXIV, Source: The Green House Project; "Home Economics: The Business Case for The Green House Model.", (2012), <http://thegreenhouseproject.org/doc/21/business-case-full-web.pdf> (accessed April 10, 2013), 17.

The tables below (Figure XXV) show detailed labor time and cost relations, as well as the staffing patterns for GH facilities.

LABOR TIME AND COST

Work Flow Title	Hourly Wage*	Time per Resident Day			Hourly Cost		
		Green House	Traditional	Difference GH vs. Trad.	Green House	Traditional	Difference GH vs. Trad.
Registered Nurse	\$32.80	27min	23min	+4min	\$14.76	\$13.45	+\$1.31
Licensed Practical Nurse	\$23.43	42min	36min	+6min	\$16.40	\$15.00	+\$1.41
CNA/Shahbaz	\$13.26	4h 10m	2h 36m	+94min	\$55.17	\$33.69	+\$21.49
Shahbaz Premium	\$0.59	N/A	N/A	N/A	\$2.45	\$-	+\$2.45
Housekeeping	\$12.28	5min	32min	-26min	\$1.11	\$6.51	-\$5.40
Laundry	\$10.92	4min	13min	-10min	\$0.65	\$2.40	-\$1.75
Dietary	\$10.89	5min	1h 10m	-65min	\$0.87	\$12.63	-\$11.76
Dietitian	\$27.29	2min	5min	-3min	\$0.82	\$2.18	-\$1.36
Activities	\$14.49	2min	17min	-14min	\$0.58	\$4.06	-\$3.48
Staff Education	\$29.19	1min	2min	-1min	\$0.58	\$1.17	-\$0.58
Admin & Clinical Lead	\$41.13	20min	1h 4m	-44min	\$13.99	\$44.01	-\$30.03
Total (Excluding Admin)		5h 38m	5h 54m	-16min	\$93.41	\$91.09	+\$2.32
Total (Including Admin)		5h 58m	6 h 58m	-60min	\$107.40	\$135.10	-\$27.71

*Source: Bureau of Labor Statistics (Includes an 18% benefit load)

GREEN HOUSE STAFFING PATTERNS

	1st Shift	2nd Shift	3rd Shift	Hours Per Day
12 Bed Homes				
Shahbaz	3.0	2.0	1.0	4.0
Licensed Nurse	0.5	0.5	0.3	1.0
10 Bed Homes				
Shahbaz	2.0	2.0	1.0	4.0
Licensed Nurse	0.5	0.5	0.3	1.1

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Figure XXV, Source: The Green House Project; "Home Economics: The Business Case for The Green House Model.", (2012), <http://thegreenhouseproject.org/doc/21/business-case-full-web.pdf> (accessed April 10, 2013), 37.

14. HONOLULU NURSING FACILITIES VISIT SUMMARY

14.1 A posteriori summary:

This author visited four Honolulu nursing facilities in a period between January and April 2013. Two facilities were operating as chain government facilities, the third was operating as an individual for-profit, and the fourth as an individual nonprofit facility type. These visits helped the author to realize how nursing facilities operate in practice, and gain a sense of the specific improvements that local facilities need. This knowledge, combined with the literature research findings, helped the author to produce a draft program for design that incorporates all the necessary program elements and remains within the state and federal requirements (see next chapter).

In general, several things were noted as areas of possible improvement for local nursing homes:

- Hawaii specific features:

Most of the visited facilities lacked outdoor-indoor connections. Isolated, air-conditioned interior spaces were lacking connection to the therapeutic, outdoor environment. In rare cases residents were able to enjoy beautiful views of nature.

- Home-like environment:

Most visited facilities resembled hospital environments. Examples include: centralized nursing stations, shared (up to four persons) bedrooms, long and cluttered corridors, decorated with art memorabilia produced by residents (or chosen by staff), and similar. They all had schedules for activities, and some for bathing and toileting (in cases of shared bathrooms). Residents' rooms were personalized to the extent that some residents had their own TV. However, in shared bedrooms one or two TVs playing loud interrupted sleep of some roommates.

- Resident-centered care:

Resident-centered care requires that nursing facility staff personally know each resident and vice versa. This means abandoning the scheduled system of operations, and allowing residents the freedom of choice. None of the visited facilities had a home-like structure of organization. All facilities mainly resembled the traditional hospital-like type of long-term care facilities.

- Flexible spatial organization:

Flexible spatial organization is highly correlated to the previous point. For instance, on a bedroom level the furniture layout can be designed so that it can be easily reorganized in order to fit the need of a new resident. Another example would be to design flexible separations in common areas or activity spaces to allow for different activities to take place.

None of the visited facilities had the high level of spatial flexibility. Some facilities had two dining areas which allowed residents to choose the preferred place during mealtimes, but in several instances the dining area and activity space were combined.

- Distribution of leadership to staff

This point was not fully assessed on the field by this author. However, it is crucial that the staff work directly with residents and know their needs. Staff members need to be given a share of managerial tasks in order to better assist residents in the resident-centered care units. In the visited facilities, I learned that the direct care staff is aware of how things could be improved in their facility, but they lack the empowerment.

- Smaller communities:

All visited sites had bigger nursing floor units than recommended by the Green House model (bigger than 10 to 12 residents per floor). Smaller communities are the key to allowing the staff to get to know their residents. They are more natural and more home-like, than big hospital-like facilities. In smaller communities,

personal connections are naturally established and the quality of care is automatically better. Also, this allows the staff to get to know each other and to cooperate more efficiently than in a larger facility.

14.2 Honolulu nursing homes visits collected data tables:

Residents bedroom level						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Max # of res./bdm.	4	4	4	2	4	4
Min # of res./bdm.	4	4	4	1	n/a	n/a
Privacy curtains/resident	1	1	1	0	1	Req.
Privacy partitions/resident	0	0	0	0	1	Req.
Privacy part.-curtain-comb/res.	0	0	0	1	1	Req.
No. of closets/res.	1	1	1	1	1	Req.
Personal closet in bathrms.	0	0	0	1	n/a	n/a
Max # of res./toilet rm.	8	4	8	2	n/a	8
Min # of res./toilet rm.	8	4	4	1	n/a	n/a
Common toilet rms. for res./floor	-	0	0	-	n/a	n/a
Max # of res./shower rm.	8	4	8	2	n/a	14
Min # of res./shower rm.	4	4	4	1	n/a	n/a
common shower rms./floor	-	1	0	-	n/a	n/a
tv in the room	Yes	No	Yes	Yes	n/a	n/a
Room personalization	Yes	Yes	Yes	Yes	n/a	n/a
Natural vent. or AC	AC	Nat.	Nat.&AC	Nat.&AC	n/a	n/a
Windows utilize views	No	No	Yes	Yes	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXVI, Honolulu nursing home visits summary

Nursing Unit level						
NF staff						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Decentralized N-station	No	No	No	No	n/a	n/a
Dig. med. records.	No	No	No	Semi-dig.	n/a	n/a
Decentr. pers. care supp. stor.	No	No	Yes	Yes	n/a	n/a
Centr. pers. care supp. stor.	Yes	Yes	No	Yes	n/a	n/a
Decentr. medical storage	No	No	No	No	n/a	n/a
Respite for staff	Yes	Yes	Yes	Yes	n/a	n/a
Conference rm./floor	1	1	0	1	n/a	n/a
Residents						
> 1 multipurp. rm./per floor	Yes	Yes	No	Yes	1 or more	n/a
Multipurp. rms as dining rms	Yes	Yes	Yes	No	Allowed	Allowed
≥1 TV in multipurpose rms.	Yes	Yes	Yes	Yes	n/a	n/a
Computers for residents	No	No	Yes	Yes	n/a	n/a
Never-ending wandering pathways	No	No	No	Yes	n/a	n/a
Corridor clutter	Yes	Yes	Yes	Yes	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXVII, Honolulu nursing home visits summary

Nursing Facility level						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Outdoor area	Yes	Yes	No	Yes	n/a	n/a
Dig. med. records.	No	No	No	Semi-dig.	n/a	n/a
Decentr. pers. care supp. stor.	No	No	Yes	Yes	n/a	n/a
Centr. pers. care supp. stor.	Yes	Yes	No	Yes	n/a	n/a
Decentr. medical storage	No	No	No	No	n/a	n/a
Respite for staff	Yes	Yes	Yes	Yes	n/a	n/a
Conference rm./floor	1	1	0	1	n/a	n/a
Residents						
> 1 multipurp. rm./per floor	Yes	Yes	No	Yes	1 or more	n/a
Multipurp. rms as dining rms	Yes	Yes	Yes	No	Allowed	Allowed
≥1 TV in multipurpose rms.	Yes	Yes	Yes	Yes	n/a	n/a
Computers for residents	No	No	Yes	Yes	n/a	n/a
Never-ending wandering pathways	No	No	No	Yes	n/a	n/a
Corridor clutter	Yes	Yes	Yes	Yes	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXVIII, Honolulu nursing home visits summary

The site level						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Located near Public transport. Stops	Yes	Yes	Yes	Yes	n/a	n/a
Located near schools	No	No	Yes	Yes	n/a	n/a
≤1 mi away from nearest hospital	Yes	Yes	Yes	No	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXIX, Honolulu nursing home visits summary

Culture change in Nursing Homes						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Culture Change in Nursing Homes	Trad.	Trad.	Trad.	Striver	n/a	n/a
Integrated into the community	No	No	No	No	n/a	n/a
Occupancy rate (%)	97	87	98	75	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXX, Honolulu nursing home visits summary

NF size						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Total # of Certified beds	158	155	82	20	n/a	n/a
Participates in Medicare, Medicaid, or Both	M&M	M&M	M&M	M&M	n/a	n/a
Continuing Care Facility	No	No	No	Yes	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXXI, Honolulu nursing home visits summary

NF ownership types						
Facility	A	B	C	D	Federal Regulations	State of Hawaii Regulations
Profit status	Gov.	Gov.	For-Profit	Nonprofit	n/a	n/a
# of owned NFs	Multiple	Multiple	Single	Single	n/a	n/a
Manag. Type	State	State	Partnership	Corp.	n/a	n/a
Real estate	Own	Lease	Own	Lease	n/a	n/a
Visit dates:	5-Feb-13	5-Feb-13	26-Feb-13	8-Mar-13	/	/

Figure XXXII, Honolulu nursing home visits summary

15. THE 55-BED NURSING FACILITY PROGRAM DRAFT

After analyzing the culture change nursing home models and after visiting four Honolulu based nursing homes this author drafted the program for designing the first Green House (GH) nursing facility in Kakaako.

The modern nursing facility (with a maximum of 36,431.5sf for the total building area) will include five independent (11-bed) nursing floors/units, a rooftop garden and a common/commercial space on the ground level.

❖ Program for a typical 11- bed independent nursing floor/unit (approximately 6500sf):

1. Residents' room = total 288sf:

- Bedroom area, total = 208sf

Flexible furniture settings. Explore options of opening up private bedrooms, and joining them into semi-private (two beds) rooms.

- Entertainment area = 35sf
- Closet = 13sf
- Refrigerator for snacks = 4sf
- Medical supply storage = 7sf
- Medication (lockable) cabinet = 4.5inx24in
- Bed area = 160
- Bathroom = 80sf
- Personal storage in bathroom

2. Common areas:

- Two smaller, open dining room spaces per floor, total = 300sf
- Several smaller areas for various activities
 - enclosed , quiet space (den/library) =350sf
 - open, active space (living room - central gathering place) = 400sf
- Physical, speech and occupational therapy space = 200sf
- Accessible outdoor areas per each floor (enclosed porch/lanai) = 200sf
- Public restroom = 50sf

3. Office space:

- Nursing Administrator office = 80sf
- File room = 15sf
- Financial office = 60sf
- Staff break room = 135sf

4. Service areas:

- One open kitchen per each floor = 290sf
- Food storage/Pantry = 140sf
- Central medication room (lockable, with a small fridge, and sink) = 50sf
- Laundry and clean storage = 100sf
- Linen soiled storage = 50sf
- Housekeeping supplies (include sink) = 50sf

- Waste storage w/ shoot and sink (include medical waste) = 50sf
- Mechanical = 50sf
- Equipment storage = 60sf
- Bathing room = 300
- Bathing storage for linen = 25sf

❖ **Facility level program elements:**

- Entry foyer = 200sf
- Entry foyer closet space = 15sf
- Retail space = 800sf
- Rooftop garden (Intergenerational programs) = 4,000sf
- Public parking = 9-12 slots

16. THE OUTCOME OF THE DESIGN PROCESS

16.1 Design goals:

The following design goals apply for the proposed nursing facility in Kakaako:

1. meeting the market demand,
2. achieving good quality of life for Alzheimer's residents,
3. adhering to life safety requirements,
4. incorporating site specific design elements.

The market analysis shows that I need to design a nursing home that can house 55 residents afflicted with Alzheimer's disease. The home also has to periodically accommodate intergenerational programs for approximately 225 family and neighborhood members.

In the previous chapters, I concluded that the best quality of nursing care is offered in the Green House (GH) project nursing facility model, and/or its equivalents. The proposed project goal is to follow the GH concept in order to create a physical environment that supports a higher level of care. Basically, this means that each nursing floor plan be organized around a centrally positioned open concept kitchen, with adjoining dining and living areas; that each resident has a private room with an ensuite full bathroom; and each resident has outdoor access.¹ An outdoor access is especially important for memory care nursing home residents in Hawaii. Ample landscaped wandering paths considerably improve Alzheimer's residents' qualities of lives.

In order to satisfy the life safety requirements my project is compliant with the State of Hawaii administrative rules for nursing homes, the International Building Code 2012 requirements, and the Americans with Disabilities Act (ADA) Standards for Accessible Design

1 - Hollinger-Smith, Linda, man. editor, "Financial Implications of The Green House Model," *The Seniors Housing and Care Journal*, Vol.19, No. 1 (2011): 1–22. http://blog.thegreenhouseproject.org/wp-content/uploads/2011/09/NIC_2011_SHCJ_GreenHouseArticle.pdf (accessed October 02, 2014), 5. (hereafter cited as The GH model. 2011 article)

2010. These rules and regulations define the minimum requirements for the protection of all nursing home users.

In regards to the site specific design elements, I considered the Land Use Ordinance, the Hawaii Community Development Authority (HCDA) regulations, Kakaako demographic data, Alzheimer's disease nursing bed demand and local geo-climate conditions.

The selected site zoning regulations are defined by the HCDA in the 2011 Mauka Area Plan and Rules. These regulations specify:²

- building types (podium high rise, urban block, "Lei" building, courtyard building, and flex/loft),
- frontage types (stoop, dooryard, forecourt, shop front, terrace front),
- building placement (10 to 40 feet front built to line, minimum 60% frontage occupancy at build to line, 0 feet side and rear setbacks),
- building form (3.5 floor-to-area ratio, street front element 40 to 65 feet high, maximum height 400 feet),
- land uses (all land uses are allowed except residential single family and educational day care home uses).

The latest census demographic information and nursing bed demand reflect the potential number of Alzheimer's residents and their background information. The background information about the socio-economic circumstances of families afflicted with Alzheimer's disease was one of the most important considerations in this research. The findings show that the median annual income of the working caregivers in Hawaii is approximately \$39,000,³ and that they have to pay approximately \$109,000 in annual fees for their loved one residing in a nursing home in Hawaii.⁴

2 - HCDA; "Mauka Area Rules," (Kakaako Plan and Rules), <http://dbedt.hawaii.gov/hcda/files/2013/02/Ch.-217-Mauka-Area-Rules-EFF-2011-11-11.pdf> (accessed October 02, 2014), 13-26.

3 - Wesley Lum, "The Development of Public Policies to Support People Who are Balancing Work and Eldercare in Hawaii," (PhD diss., University of Hawaii, 2009), 91-132.

4 - The Prudential Insurance Company of America, "Long-Term Care Cost Study: Including consumer perceptions and cost trends by state and key metropolitan areas," (Prudential Research Report, 2010), <http://www.prudential.com/media/managed/LTCCostStudy.pdf> (accessed October 02, 2014), 15.

This underscores the prevalent role of public assistance, such as Medicaid/Medicare, in financing nursing home services. All this data helped me to define the adequate response to the memory care nursing facility market in Kakaako.

Finally, climate conditions are reflected in the building systems selection and design. Hawaii's tropical climate requires sun-protective and energy saving building systems. My proposal is described in the following text and drawings.

16.2 Design proposal:

16.2.1 Proposed management:

Considering the high land value, and high construction costs associated with building in Hawaii, it seems that a nonprofit ownership/management would be the perfect candidate for the proposed Kakaako nursing facility (organized according to the Green House principles). Only a nonprofit organization would have an opportunity to acquire the selected HCDA's lot under the extremely favorable terms, by renting the land for one dollar per year for a lease of 65 years. Furthermore, nonprofit organizations can typically subsidize their costs through donations, which can contribute to further savings in the process of construction and later during the nursing facility operation.

My research indicates that a nonprofit nursing facility management is typically highly concerned with the quality of provided care. Their way of doing business is tightly correlated with the subsidies they receive from sponsoring organizations, which allows them to focus on providing care improvements.⁵ A nonprofit management is found to be the predominant ownership structure for the Green House facilities.⁶ The Green House principles are instructive of how to use, operate and build a nursing facility in order to allow for a better quality of life in a home-like residence. In terms of costs, Green House model operating costs are competitive to

5 - Greg Arling, et al., "Nursing Home Cost and Ownership Type: Evidence of Interaction Effects," Health Services Research, 1987 June; 22(2): 255-269. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1065434/> (accessed October 02, 2014), 259-268.

6 - The GH model. 2011 article, 19-21.

the other traditional and culture changing nursing facility models, but the starting capital costs of Green House models are higher than those of traditional facilities. The capital cost for the GH model is countered by increased occupancy and more private pay revenue.⁷ This means that the private pay portion of the nursing facility market (which consists of residents that pay for nursing services out their pockets or have a private long-term care insurance) favors the GH model of nursing care and very likely pays higher rates for the stay in these facilities. In order to create a project suitable for the exact socio-economic condition in Kakaako, I propose a hybrid Green House solution that compounds private and semi-private bedrooms, and therefore opens the door for the individuals with depleted personal savings dependent upon the Medicare/Medicaid financial assistance.

The performed analysis for a memory care nursing home market shows that Kakaako has the potential to sustain four projects of this kind and size at this moment. In the year 2030 statistics predict that Kakaako's market potential will increase to six nursing home projects. But, as I indicated in previous chapters, not all families will be willing to place their loved one in a nursing home. Therefore, the true market need has to be established at the time of construction (most likely one project at a time). For the purposes of this dissertation, and considering the presented market findings, I assume that the management would consider a chain ownership type. Kakaako has many small lots potentially available for several projects of this size. From the management's point of view, chain nursing facilities help keep the operating costs low. Chain facilities can standardize their services in order to control their costs of operation.⁸ In my case, the chain ownership creates the additional opportunity to use the standardization in the construction process as well. Even though the selected site project is small, when it gets replicated several times throughout the neighborhood, the use of prefabrication construction processes becomes viable. Therefore, I propose the use of totally prefabricated bedroom units for this project. The use of a standardized bedroom unit type, along with a flexible structural system

7 - Ibid.

8 - Greg Arling, et al., "Nursing Home Cost and Ownership Type: Evidence of Interaction Effects," *Health Services Research*, 1987 June; 22(2): 255–269. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1065434/> (accessed October 02, 2014), 259-268.

frame will allow for various spatial configurations that can adjust to the specific lot conditions. Prefabrication should lower the construction cost, and accelerate the construction process.

16.2.2 Construction systems:

I propose affordable and environmentally friendly materials for the main structure and other secondary building systems. The light-gauge steel structure would have been the preferred option because of its excellent structural characteristics, cost effectiveness and environmental benefits, but unfortunately, the Building Code fire protection requirements specified for the I-2 type of occupancy (nursing homes) are very restrictive. The Building Code limits the building height and area for nursing homes based on the type of construction. Only the Type I-A construction is permitted to be used for structures higher than 4 floors.⁹ This means that the proposed seven-story memory care nursing home project would have concrete as the primary structural material. A concrete structure is significantly more expensive than a light-gauge steel structure because of its significant cost related to the complex formwork labor and material. I am proposing the concrete two-way flat slab system for the following reasons:

1. The selected two-way flat slab system allows for greater spans, up to 46 feet. My proposal has spans up to 42 feet. This requires 17 inch deep concrete drop panels, and 12 to 14 inch deep concrete slabs (depending on the choice between the conventionally reinforced or post tensioned concrete structure). The use of the conventionally reinforced or post tensioned concrete can be determined in the design development process.

2. For the required span of 42 feet, the two-way flat slab structure offers a smaller floor depth and column size, compared to other concrete structure alternatives. The slab system uses 17 inch total structure floor depth, supported by 12 by 12 inch concrete columns.

9 - The International Code Council, Inc., 2012 *International Building Code* (ICC, 2011),95-110.

The International Building Code allows for the secondary structure elements to have lower fire-resistance ratings.¹⁰ I propose a light-gauge steel framing system for all partition walls and the typical prefabricated bedroom unit.

The overall dimensions of the typical prefabricated bedroom unit are 14 foot by 24 foot. The main structural steel frame is composed of 4 x 8 inches steel tubes. The wall system is composed of gypsum boards for the interior finish, 2-1/2 inch wide metal studs (spaced 12 inch off center), thermal insulation and galvanized steel sheets for the facade finish. The prefabricated units are assembled in a factory, transported to the site, and inserted between the two floor concrete slabs. The typical unit has 187 square feet bedroom, 40 square feet corridor and 55 square feet bathroom area, which constitutes a total unit area of 282 square feet. The unit can be adjusted to accommodate one to two residents and still stay within state and federal requirements (a minimum one hundred square feet for a single bed unit and eighty square feet per resident in a semi-private bedroom).¹¹ This is the crucial feature for achieving the flexibility of operations for the possible nursing home market fluctuations (private pay or Medicaid/Medicare market prevalence).

16.2.3 The designed nursing facility project:

I propose a modern 55-bed memory care nursing home in Kakaako. The building has seven floors and the total realized building area of 34, 227sf, out of the allowable 36,431.5sf. The allowed building envelope types for this lot are defined under HCDA's Mauka rules and regulations. The proposed building is designed considering the "Lei" building rules. These rules allow for the 40 to 65 feet high front element and the maximum building height to go up to 100 feet.¹² My proposal meets the 65 feet rule, but the tallest roof is at 109 feet and 6 inches. In order not to go under the podium high-rise type provisions, the developer would ask for the height

10 - Ibid.

11 - Department of Health, State of Hawaii; "Title 11, Chapter 94.1: Nursing Facilities: Hawaii Administrative Rules," (April 13, 2012), <http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-94.1.pdf> (accessed November 10, 2012), 48.

12 - HCDA; " Mauka Area Rules," (Kakaako Area Plan and Rules), <http://dbedt.hawaii.gov/hcda/files/2013/02/Ch.-217-Mauka-Area-Rules-EFF-2011-11-11.pdf> (accessed October 02, 2014), 13-26.

variance allowance from the HCDA, arguing that for the residents' better quality of life, the project incorporates an accessible rooftop garden, and that for life safety reasons the egress staircase and elevator cores have to exit on the rooftop level. Furthermore, the zoning provisions require 20 feet setback for the building portion above 65 feet high. Therefore the fifth, sixth and seventh floor have a considerably smaller built area.

Guided by the conducted research process, I decided to use the Green House concept in order to provide a better quality of life for residents. The Green House model (or its equivalents) attracts increased occupancy of private pay residents. In order not to lose the Medicare and Medicaid portion of the nursing home market, I propose a hybrid solution. This means that the project compounds the Green House private bedrooms (for private pay residents) and traditional semi-private bedrooms (for Medicare/Medicaid residents) on several floors. In both cases, in the private and in the semi-private bedroom floor layouts, the residents can enjoy home-like common spaces as required in the Green House initiatives. This means that the open-concept kitchen is replacing the traditional nurse station as the focal point on a nursing floor layout. The dining area and other living and activity spaces are placed adjacent to the kitchen space.¹³ The facility is envisioned for the early-moderate to the severe stage Alzheimer's patients. I assume that the mild stage Alzheimer's disease patients stay with their family members and will not need this type of care.

16.2.4 Designed layout:

The ground floor (2,679sf) consists of public and service areas. The floor plan is divided into two segments by the car entryway that leads to the parking lot with one accessible and six regular car slots. The public area includes the main entrance with a gift shop, a security booth, a waiting space, and a separate gallery/meeting space. The gallery/meeting space is separated from the main entrance for security reasons. Its purpose is to house the therapy sessions for

13 - Hollinger-Smith, Linda, man. editor, "Financial Implications of The Green House Model," *The Seniors Housing and Care Journal*, Vol.19, No. 1 (2011): 1–22. http://blog.thegreenhouseproject.org/wp-content/uploads/2011/09/NIC_2011_SHCJ_GreenHouseArticle.pdf (accessed October 02, 2014), 5.

family members of the elderly with dementia, and to exhibit and/or sell art and hobby pieces created by residents and their family members.

The second to fourth floor (6,020sf each) have roughly the same layout. Because these floors are located closer to the ground level, and they have a slightly greater area than the upper nursing floors, these three floors are intended for the early to mid-moderate stage Alzheimer's residents. These residents are relatively more active than the mid-moderate to severe stage patients, and their family or staff members could often take them outside for strolls in the nearby Mother Waldron park or along the Cooke street (planned for pedestrian promenade development).¹⁴ These three floors each have eight typical, prefabricated private bedroom units designed in the layout recommended by the Green House. The common areas are also slightly larger compared to the upper floors, in order to allow for different activities and programs to take place (e.g., intergenerational programs (IGPs) with kids from local schools, art and/or music therapy, and other recreational programs).

The fifth floor (4,496sf) is reserved for the severe stage Alzheimer's disease residents. The HCDA zoning regulations require 20 feet of setback, which in turn provides the opportunity to create a big lanai on this floor. Because the severe stage residents need help with walking and eventually become unable to walk, the direct access to an outdoor area (lanai) improves the quality of life. This floor has four typical prefabricated units used as semi-private bedrooms, and the fifth typical unit designated to be an isolation room. The State of Hawaii Department of Health requires at least one private bedroom per nursing unit with an adjoining toilet room to be designated as an isolation room for a patient with an infectious disease.¹⁵ This allows for a total of nine nursing beds for severe stage Alzheimer's disease residents. The central common space is purposely broken into several smaller spaces to allow for various activities. On this floor I also included a bathing room for residents that are immobile.

14 - HCDA; "Mauka Area Plan," (Kakaako Area Plan and Rules), <http://dbedt.hawaii.gov/hcda/files/2013/02/Mauka-Area-Plan-EFF-2011-10-31.pdf> (accessed October 02, 2014), 34.

15 - Department of Health, State of Hawaii; "Title 11, Chapter 94.1: Nursing Facilities: Hawaii Administrative Rules," (April 13, 2012), <http://gen.doh.hawaii.gov/sites/har/AdmRules1/11-94.1.pdf> (accessed November 10, 2012), 40.

The sixth and seventh floor (4,496sf each) have a similar layout as the fifth floor. These floors are intended for the mid to late-moderate stage Alzheimer's disease patients. These residents are all ambulatory, and for that reason the bathing room is substituted with the isolation room. In this layout each floor offers five typical semi-private bedroom units, and one required isolation room, which is atypical and must be built on site. This allows for eleven residents to live on each of these two floors. In addition to the provided interior common space, these residents would most often use the rooftop garden for their daily recreational activities.

The rooftop garden (4,195sf) is designed to be used mostly by the residents from the last two floors. The continuous loop pathway system is available to support recreational walking. The rooftop garden has working stations for planting vegetables. These can be used by the elderly residents and kids from local schools, voluntarily involved in an intergenerational gardening program. In addition, the garden has a designated covered dining area which can be used for residents birthday/anniversary celebrations.

16.2.5 Designed program:

- First floor:

Entrance lobby = 469.4sf

Security booth = 80.75sf

Waiting area = 191.4sf

Newsstand/gift shop = 108.3sf

Storage = 63.9sf

Gallery = 628.4sf

Gallery storage = 49.5sf

Two accessible public restrooms = $40\text{sf} \times 2 = 80\text{sf}$

Holding room = 81.8sf

Trash room = 53.2sf

Soiled room = 56.2sf

Emergency power = 200.25sf

Stairs, elevator cores = 615.9sf

Total first floor = 2,679sf

- Second floor (third and fourth floor typical):

Eight typical units = $8 \times 282\text{sf} = 2,256\text{sf}$

- Bedroom = 187sf
- Corridor = 40sf
- Bathroom = 55sf

Kitchen and pantry area = 212.2sf

Dining area = 253.6sf

Living area = 407sf

Library area = 91.25sf

Hobby area = 144.7sf

Trash room = 17.5sf

Laundry room = 37sf

All storage = 187.8

Main medical storage = 27.75sf

Work room = 82.5sf

Corridors = 1,686.8sf

Accessible restroom = 42sf

Stairs, elevator cores = 573.9sf

Total second floor = 6,020sf (third and fourth floor typical)

- Fifth floor:

5 typical units = 5 x 282sf = 1410sf

Kitchen and pantry area = 212.2sf

Dining area 1 = 191sf

Dining area 2 = 128.5sf

Living area = 178sf

Library area = 241.8sf

Bathing room = 140.4sf

Trash room = 24.4sf

Laundry room = 37sf

All storage = 171sf

Main medical storage = 36.9sf

Work room = 56sf

Corridors = 1052.9

Accessible restroom = 42sf

Stairs, elevator cores = 573.9sf

Total fifth floor = 4,496sf

- Sixth floor (seventh floor typical):

5 typical units = 5 x 282sf = 1410sf

Isolation room = 284.5sf

Kitchen and pantry area = 182.2sf

Dining area 1 = 191sf

Dining area 2 = 128.5sf

Living area = 178.1sf

Library area = 241.8sf

Trash room = 24.4sf

Laundry room = 37sf

All storage = 171sf

Main medical storage = 36.9sf

Work room = 56sf

Corridors = 1052.9sf

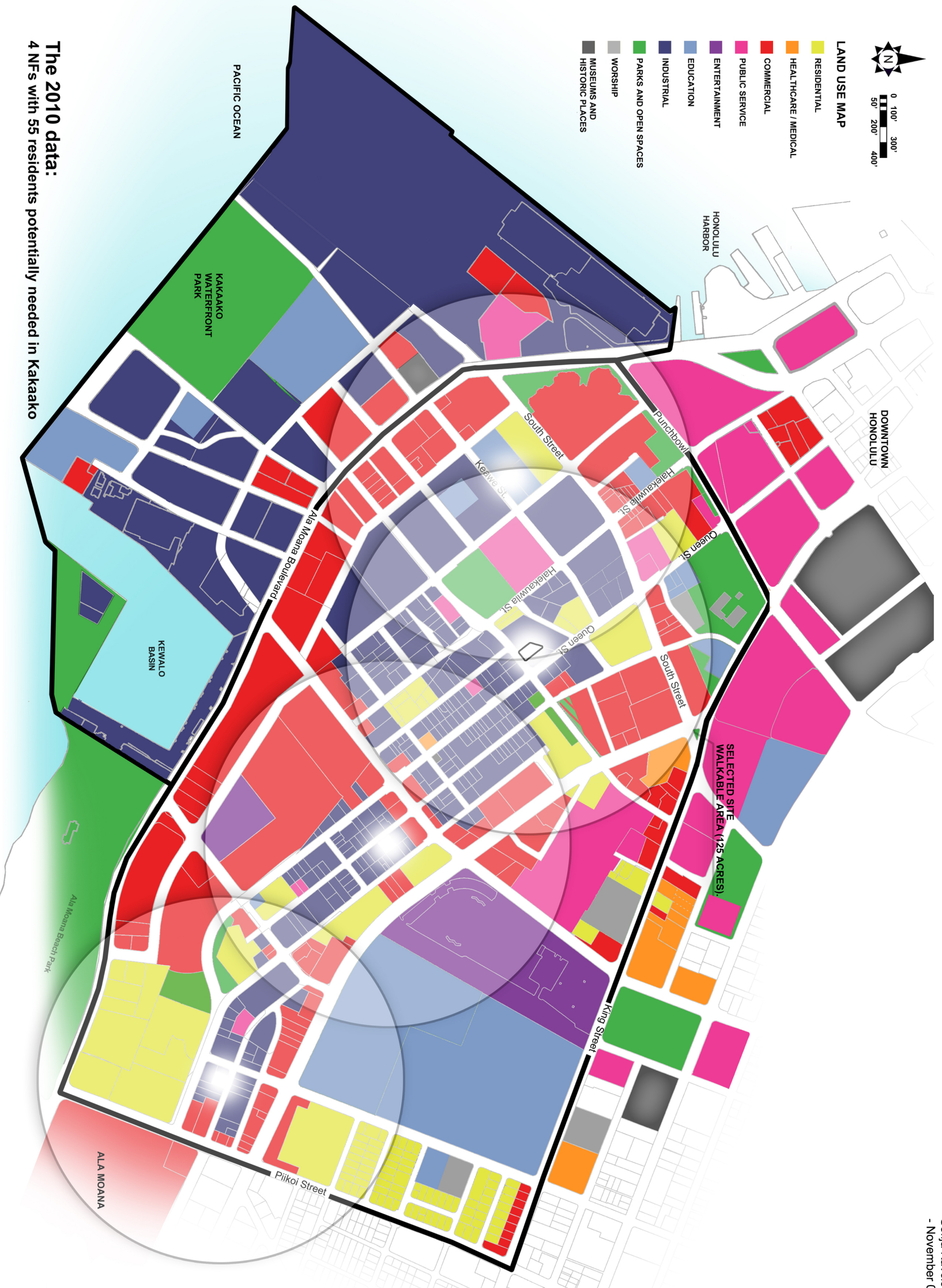
Accessible restroom = 42sf

Stairs, elevator cores = 573.9sf

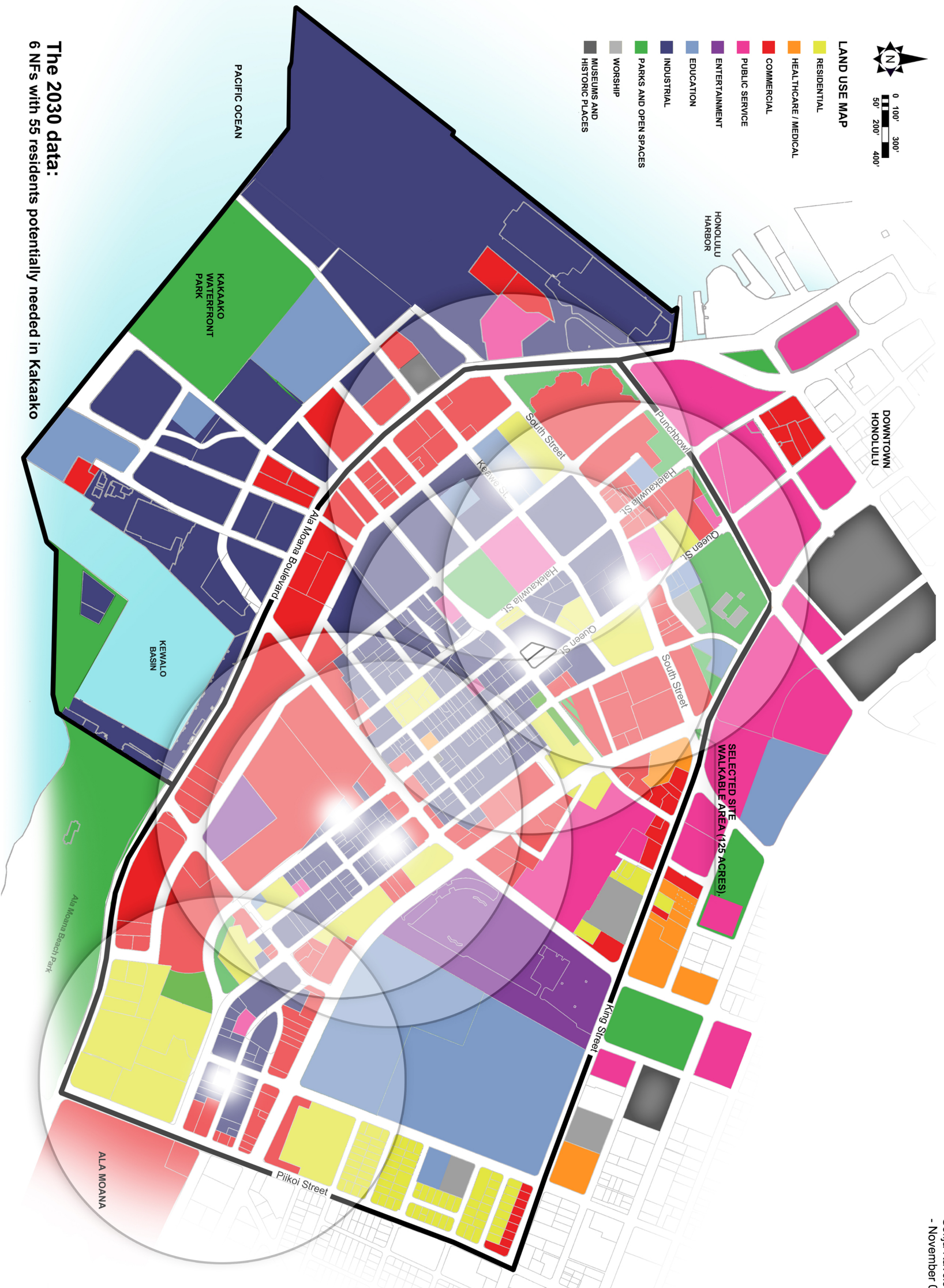
Total sixth floor = 4,496sf (seventh floor typical)

- **Total building area = 34,227sf**

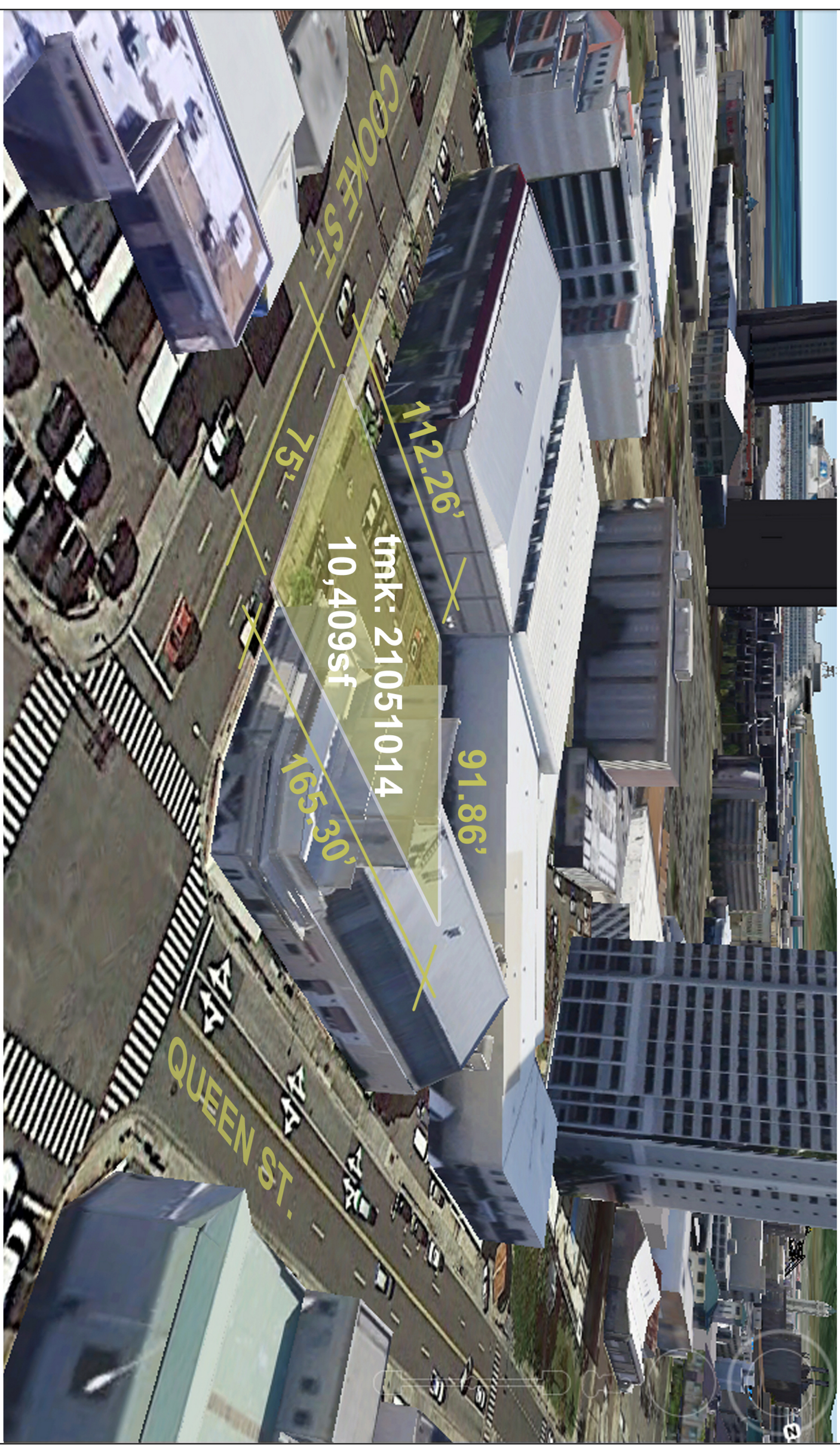
16.3 Drawings:

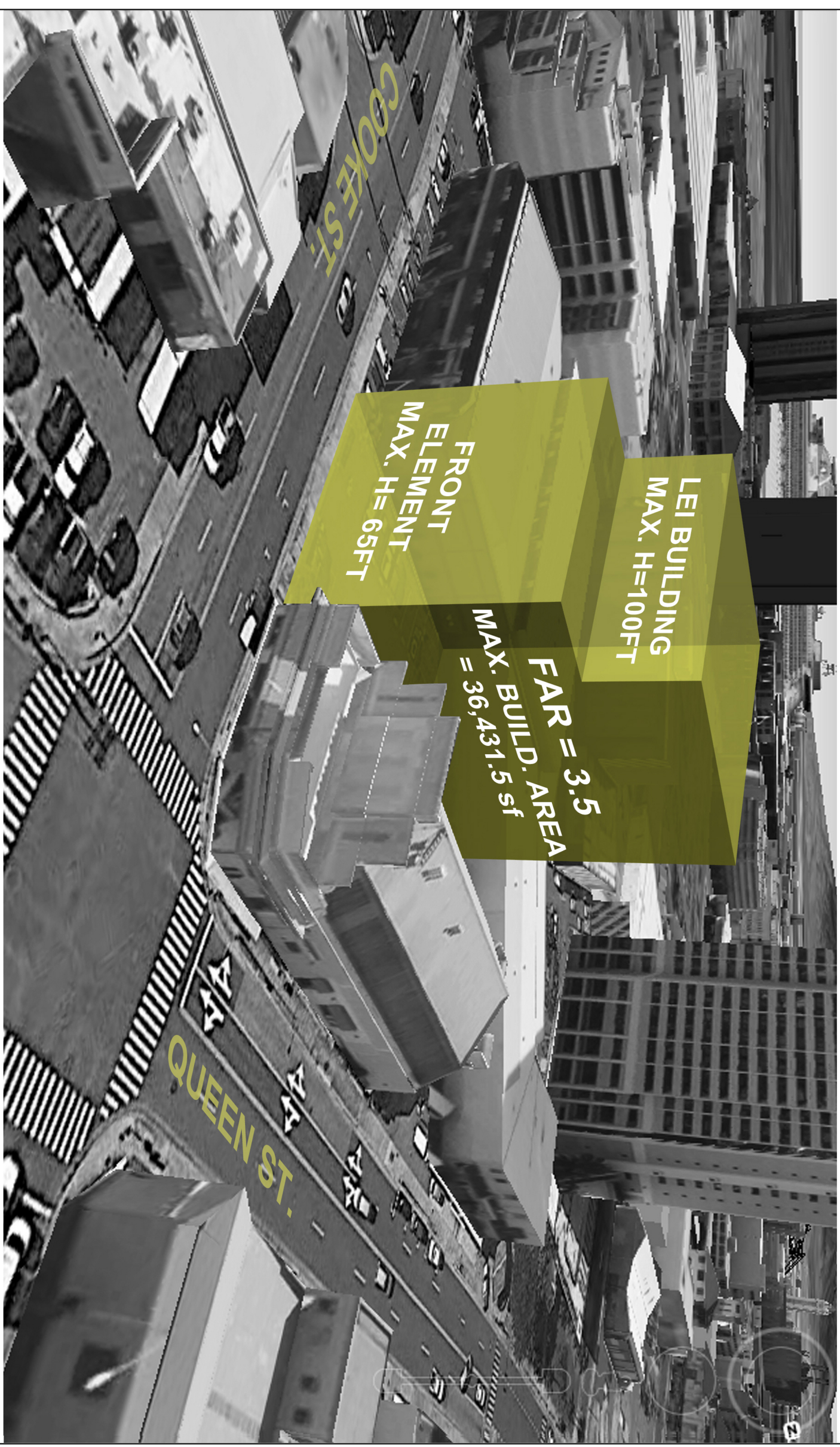


The 2010 data:
4 NFs with 55 residents potentially needed in Kakaako



The 2030 data:
6 NFs with 55 residents potentially needed in Kakaako

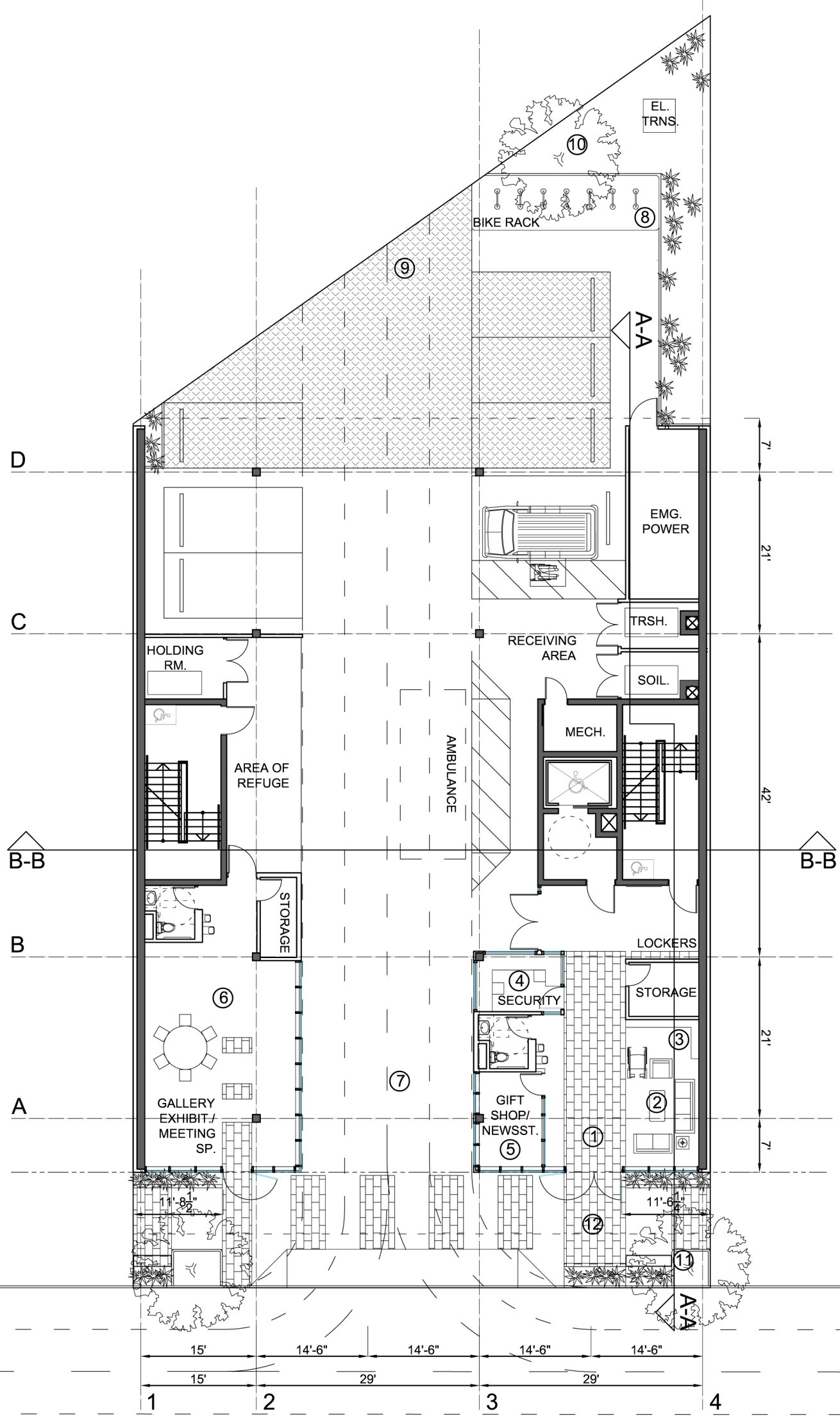




FRONT
ELEMENT
MAX. H= 65FT

LEI BUILDING
MAX. H=100FT

FAR = 3.5
MAX. BUILD. AREA
= 36,431.5 sf



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16.3.1 Incorporated research elements in design:

Ground floor:

Public areas:

- ① The same pavement design is proposed for the interior and exterior entrance space. The floor-to-ceiling glass facade is used to visually connect the two spaces. This was purposely done to enable users and passersby to observe the content even before entering, which could trigger their involvement.
- ② Waiting area is designed to be a welcoming living room on the ground floor. It can be used as a staff-family conference space, a working area for residents and their family members, or simply as a gathering space for family members.
- ③ Small library, located next to the meeting area, is designed to enable family members to read favorite books to their loved ones.
- ④ Security booth supervises the entire ground floor area. It is an integral part of the main entrance, but its position enables security personnel to monitor all entrance points.
- ⑤ Gift shop supplements the waiting area activities. Family members can buy small treats to their loved ones when they come to visit.
- ⑥ Gallery/meeting space is designed to house therapy sessions for family members and exhibit/sell work produced by family and residents together. This space is open to the community. For security reasons it is separated from the main entrance.

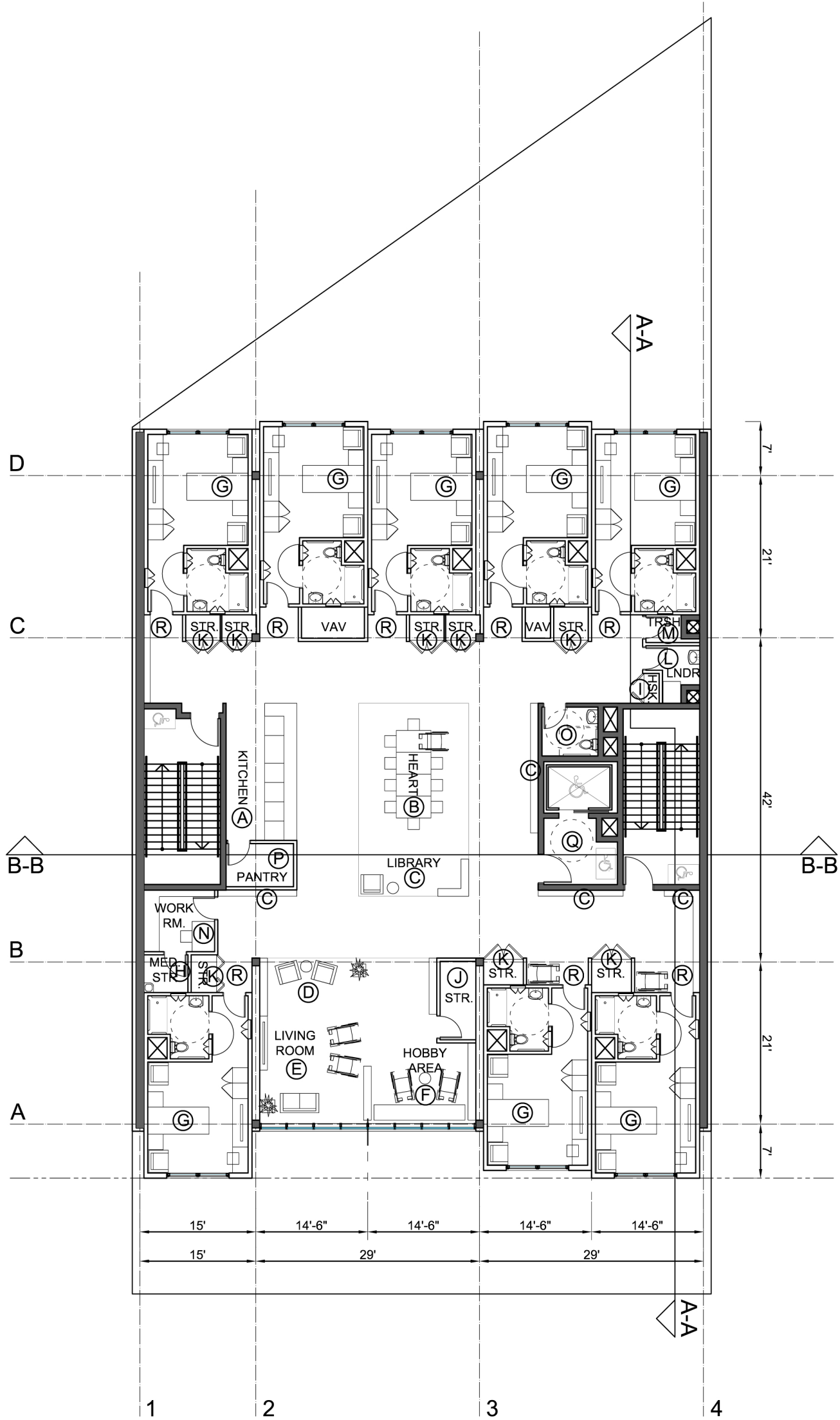
Service areas:

- ⑦ The crucial design decision was to split the ground floor plan with the car entryway that leads to the parking lot and the emergency entrance. The emergency vehicle access provides safe access and escape point for the non-ambulatory residents. The accessible vehicle parking is conveniently located to enable easy vehicle commutes for the residents. The visitors parking lot enables frequent family visits.

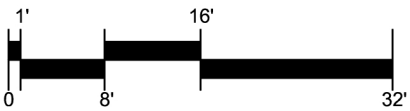
- ⑧ Bicycle rack for employees and visitors promotes healthy and environmentally friendly lifestyles.

Landscape design elements:

- ⑨ Green parking paving system is an environmentally friendly porous paving system that can effectively reduce heat, rainwater runoff and pollutions. Esthetically it creates a pleasant urban landscape for residents' rooms that have the backyard orientation.
- ⑩ Backyard trees and vegetation create a miniature urban landscape for residents that have bedroom windows viewing in this direction.
- ⑪ Front planters with trees ("cassia x nealiae" shower tree), shrubs and benches, enable visitors to use the street as the integral part of the facility entrance.
- ⑫ Front street and entrance two-tone paving floor system is designed to delineate access for vision impaired.



INCORPORATED RESEARCH ELEMENTS
IN DESIGN - TYPICAL FLOOR
SCALE: 1/16"=1'



16.3.2 Incorporated research elements in design:

Typical floor

The "Heart" of the nursing unit:

- Ⓐ Accessible open-concept kitchen available for staff and residents to prepare light meals and snacks as part of their daily routines. Main dishes are received from an outsourced licensed kitchen.
- Ⓑ Each floor has a centrally positioned dining area that accommodates all residents and staff members. Tables can be placed together or separated to allow for flexibility during mealtimes or for other activities in this area.
- Ⓒ Small library and bookshelves are designed close to the main dining area to allow for the "heart" to be transformed into a big library space that can accommodate therapy sessions and intergenerational programs.

Living areas:

- Ⓓ Separate small sitting/dining area allows for residents to choose a preferred ambient during meal or activity time.
- Ⓔ Living room is positioned close to the heart of the home. It can be adjusted to allow for quiet and dynamic activities.
- Ⓕ Hobby area is designed to allow for elderly individuals with Alzheimer's disease to create art/craft that can be sold or exhibited in the ground floor public gallery. This space is adjustable to have one-on-one therapy, or self-directed work sessions.

Residents' bedrooms:

- Ⓖ Residents' bedroom units are placed around the central heart area. Bedrooms don't have built-in furniture or fixtures. This allows for the flexibility in furniture layouts and personalization of spaces. Rooms can be adjusted to accommodate one or two residents. Residents can be engaged in the room layout decision-making. Residents can bring their own furniture (e.g., writing table, rocking chair, TV, bookshelf, closet, dresser, etc.) to

make their room more home-like. All bedroom units incorporate locked medical cabinets and ensuite bathrooms with built-in storages for each resident.

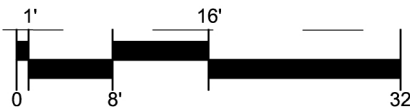
Service areas:

- Ⓜ Secured central medical storage with lavatory is accessed through the nurses' "work room". Each nursing floor/unit has its own central medical storage that supplies small medical cabinets in residents' rooms.
- Ⓜ Housekeeping supplies storage is designed on each nursing floor. It is conveniently located close to the toilet and trash room.
- Ⓜ Main storage for furniture and equipment supports different activities that take place in the heart and living room areas.
- Ⓜ Personal storage for residents in front of each bedroom is designed to store linen, hygiene, personal care products, etc.
- Ⓜ Laundry room is designed for nursing aids to wash small items (e.g., residents' cloths) or send bulky items (e.g., beddings and towels) down the chute to be picked up by a contracted laundry service company.
- Ⓜ Trash room contains a trash chute which leads down to the ground level trash disposal room, where a contracted company can pick up the trash on scheduled days.
- Ⓜ Work room is designed for nurses to complete administrative tasks and prepare medications for distribution on the floor.
- Ⓜ Accessible toilet is conveniently located close to the hart area. The main reason that can prevent nursing home residents from using common areas is the distance that residents have to cover to get to restrooms.
- Ⓜ Pantry is located close to the kitchen. It stores meals received from an outsourced licensed kitchen.
- Ⓜ Accessible elevator connects each floor with the outdoor space. The residents' daily routines include strolling in the park, or using the rooftop garden for various exercise/therapy activities.

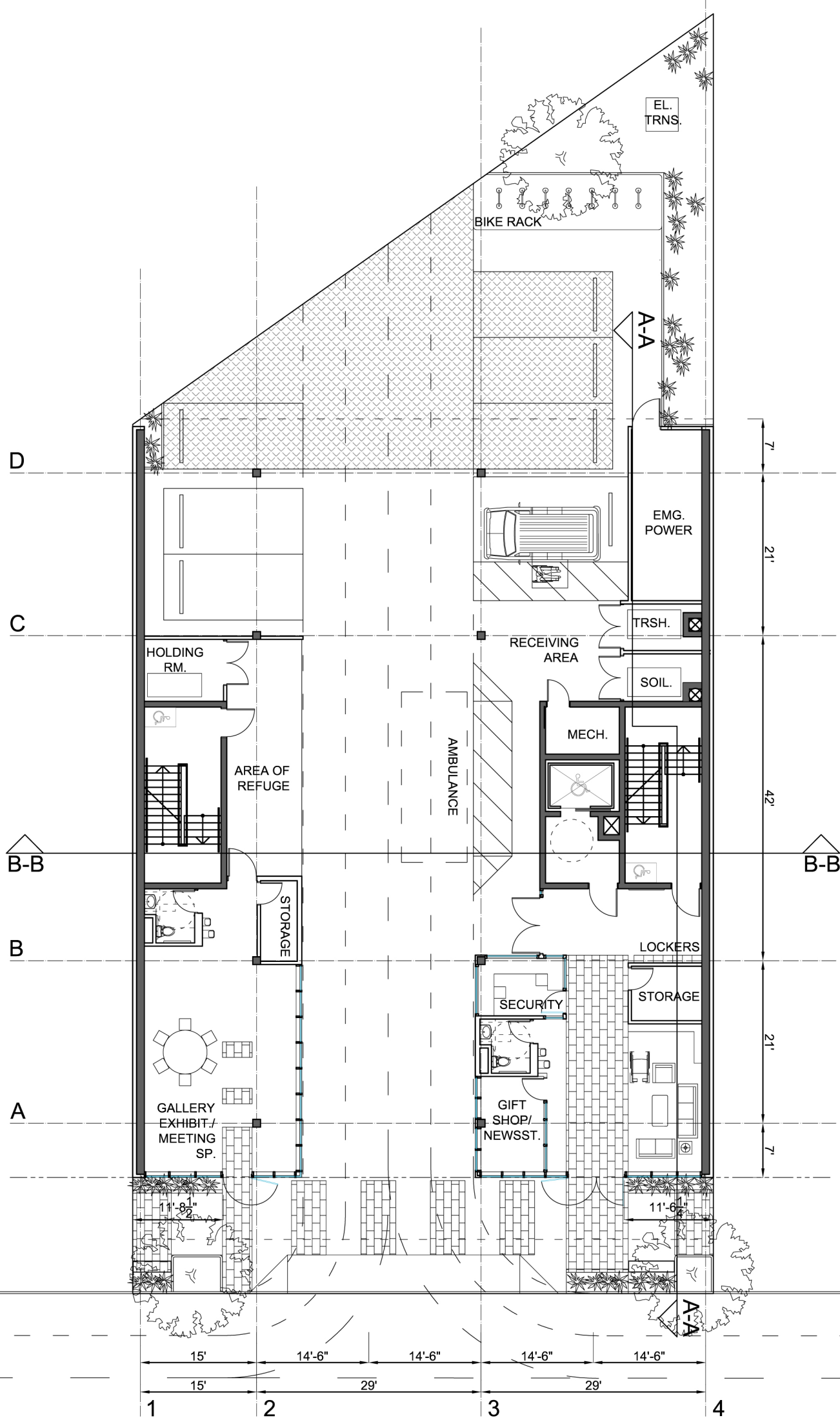
- Ⓡ Each resident's room has an entrance alcove which the resident can use as a stoop, and can personalize to his/her needs.



GROUND FLOOR (2679sf)
SCALE: 1/16"=1'

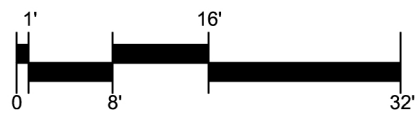


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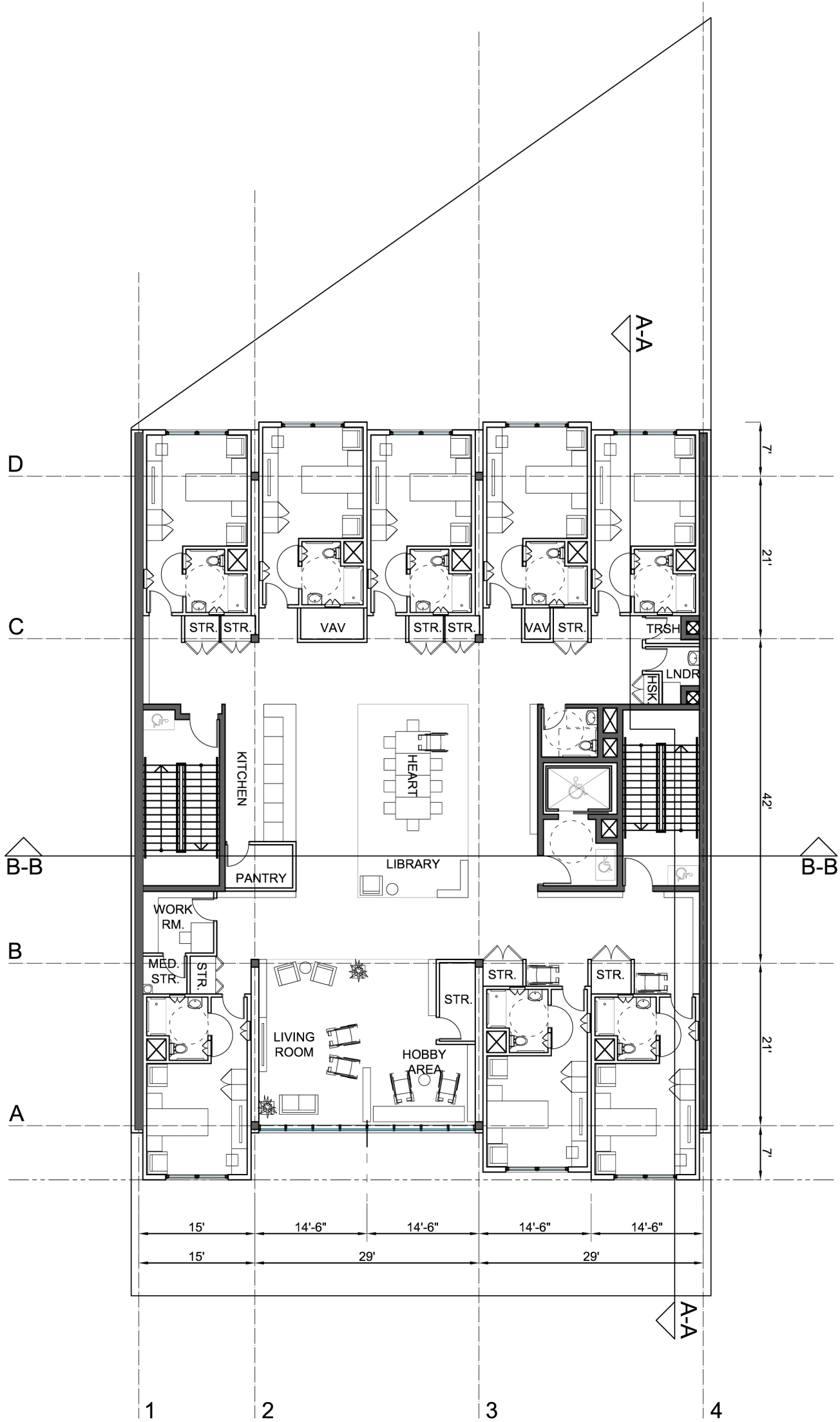




TYPICAL 2ND & 4TH FLOOR (6020sf)
SCALE: 1/16"=1'

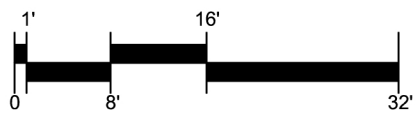


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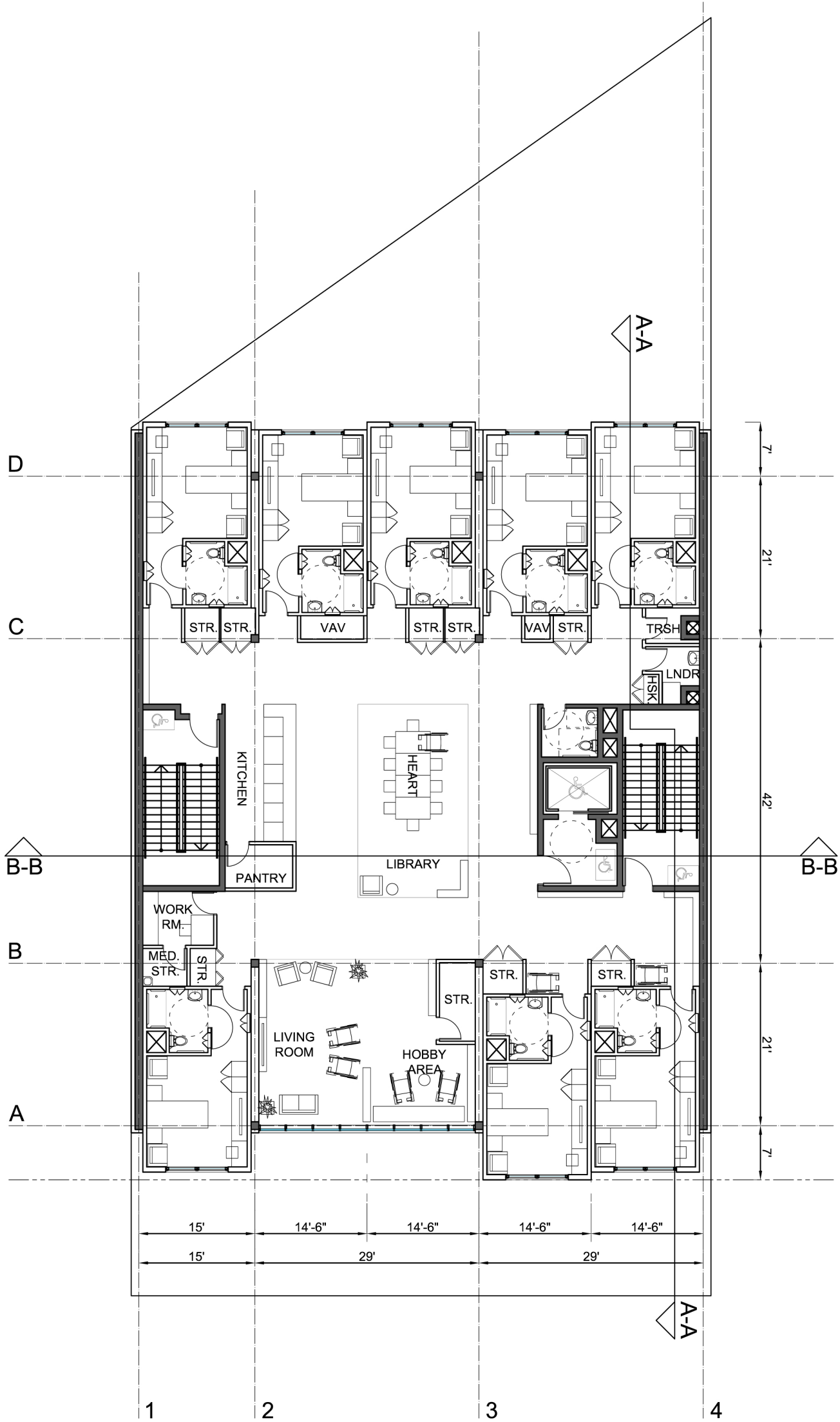




3RD FLOOR (6020sf)
SCALE: 1/16"=1'

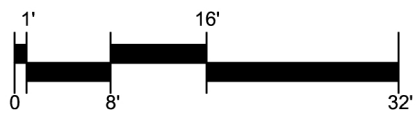


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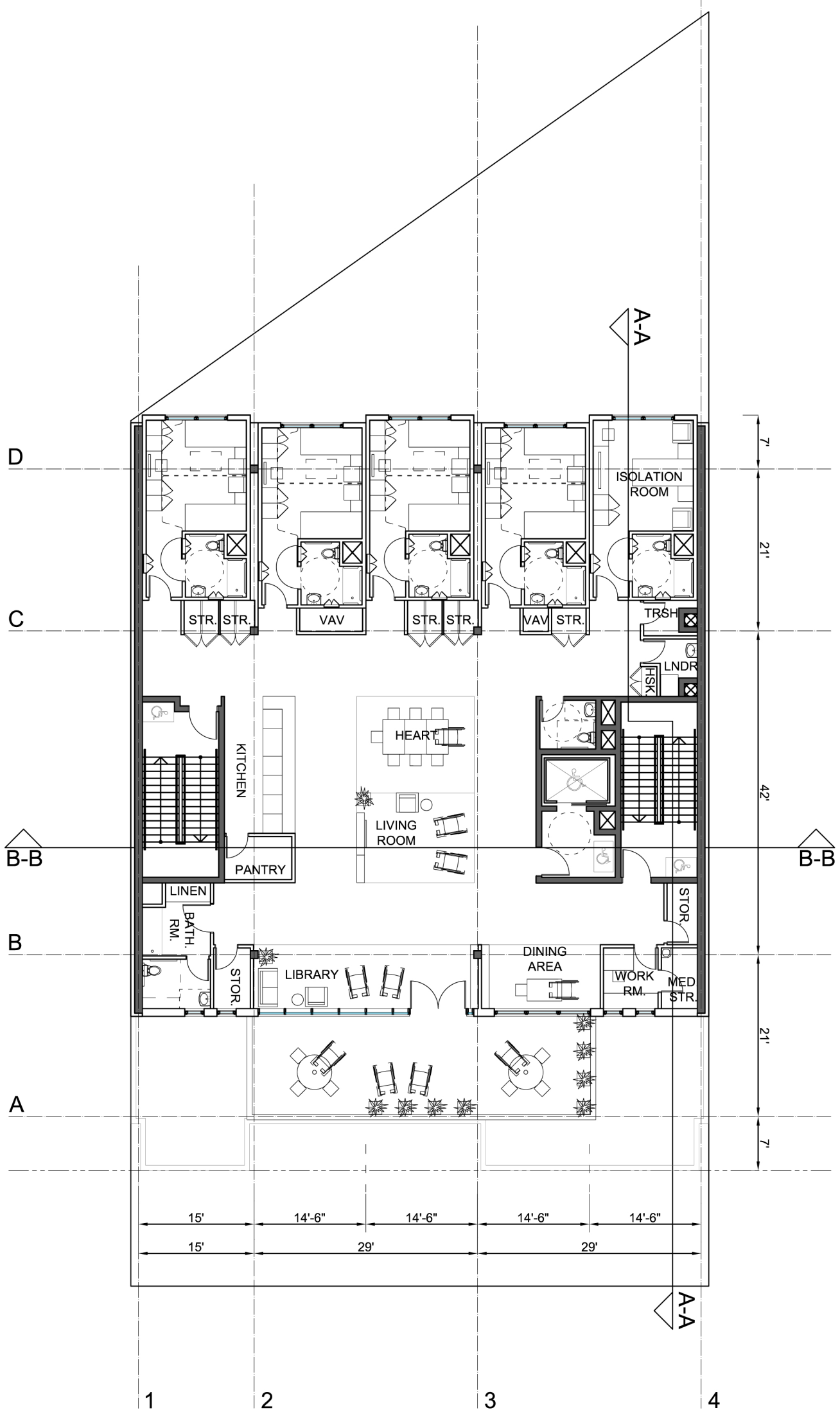




5TH FLOOR (4496sf)
SCALE: 1/16"=1'

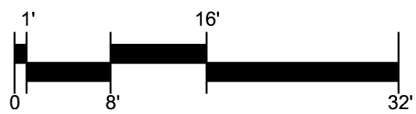


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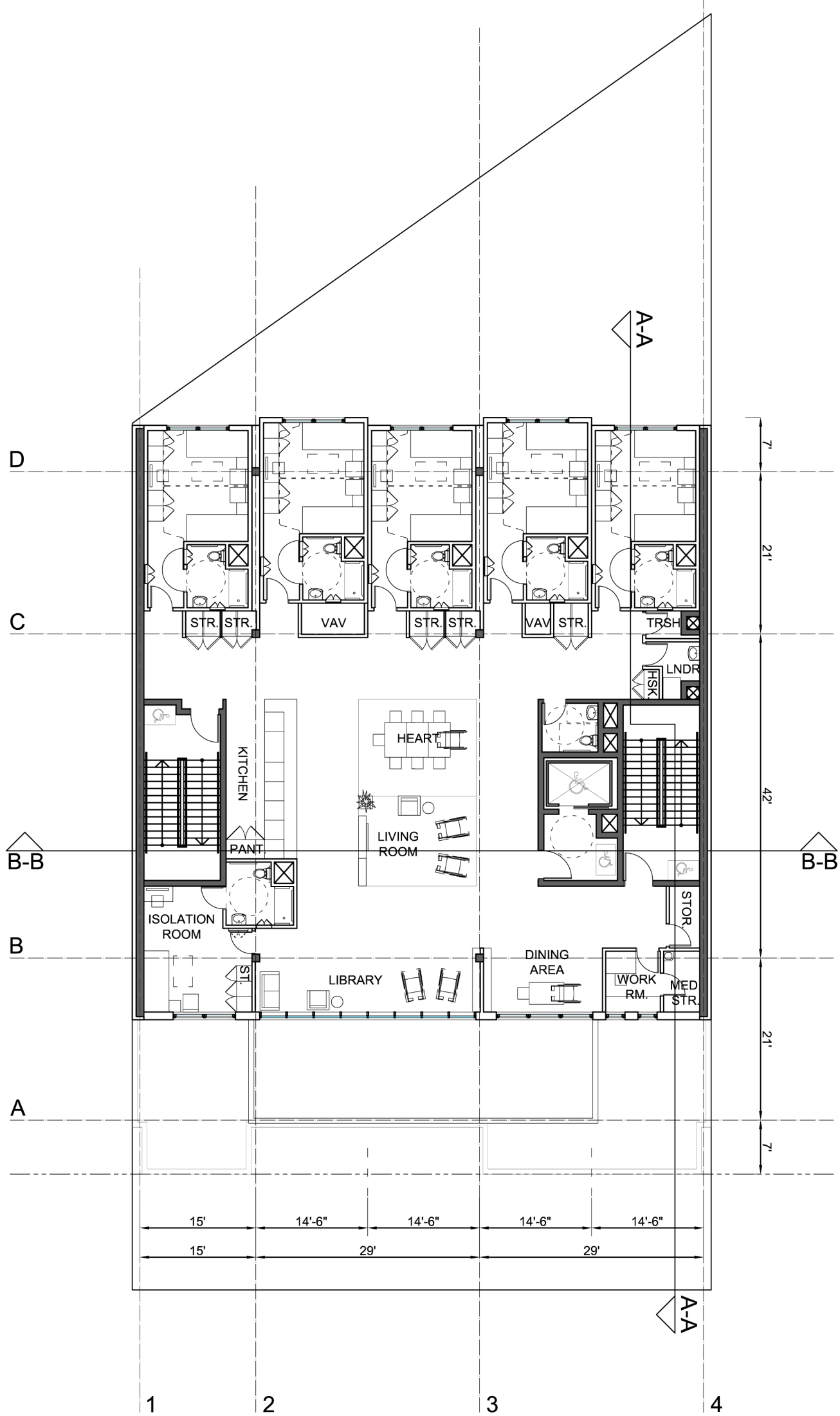


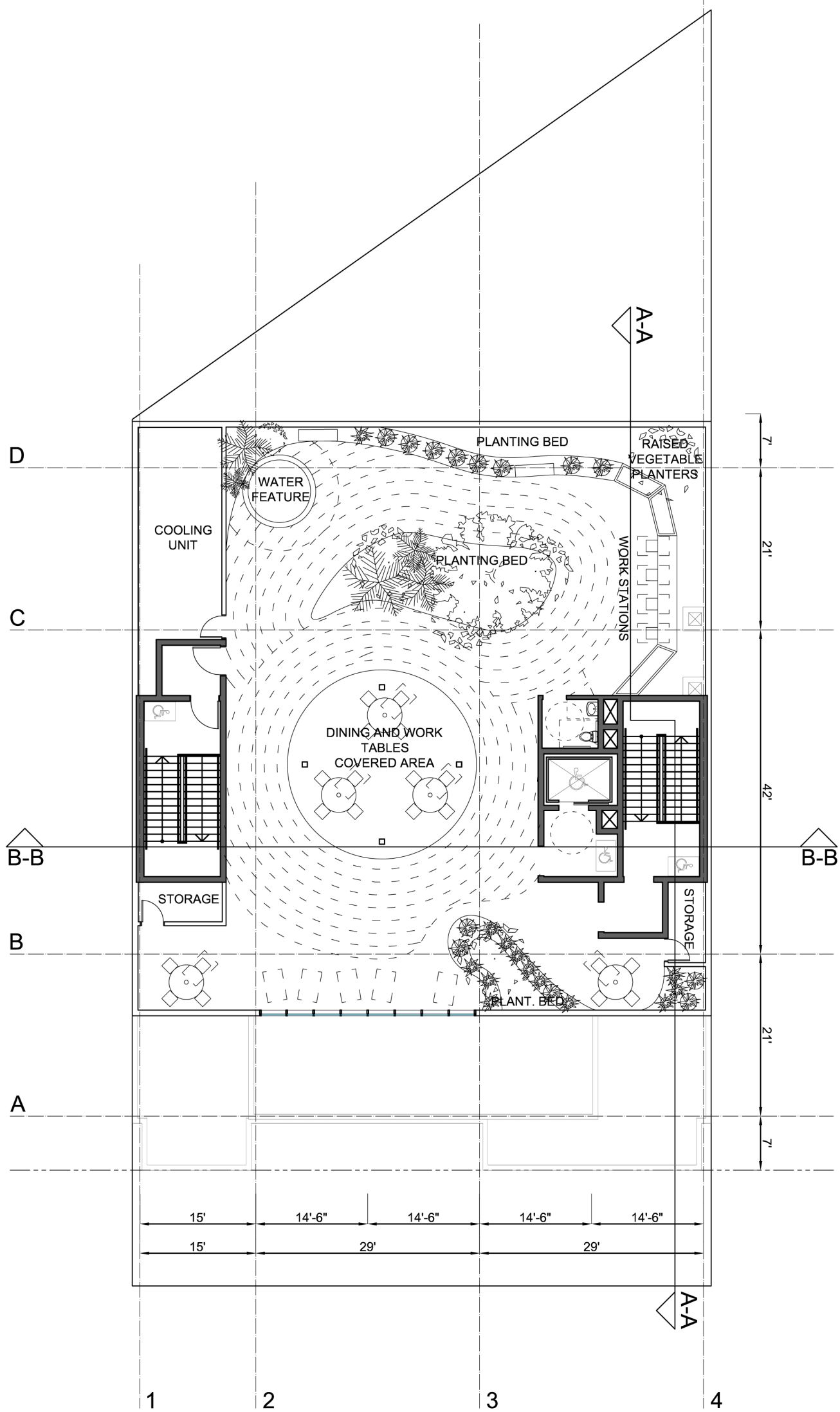


TYPICAL 6TH AND 7TH FLOOR (4496sf)
SCALE: 1/16"=1'

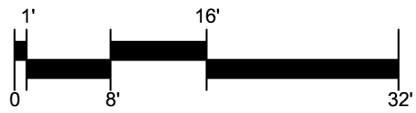


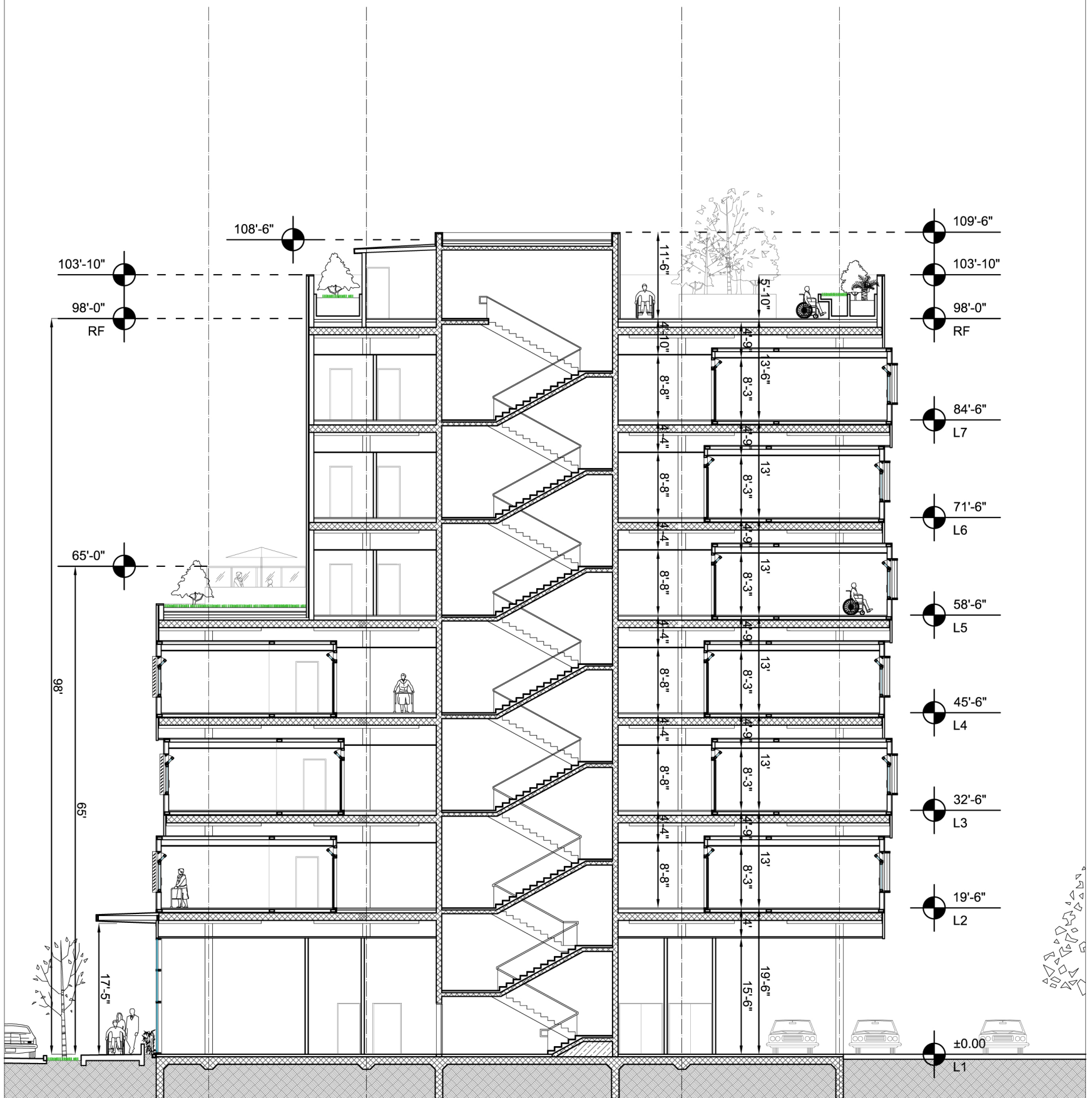
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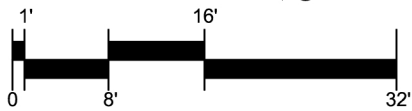


ROOF
SCALE: 1/16"=1'

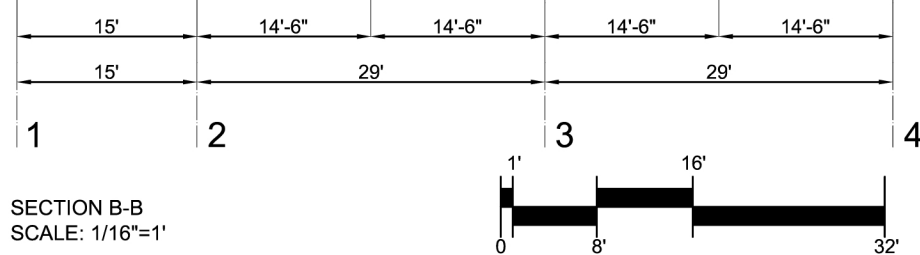
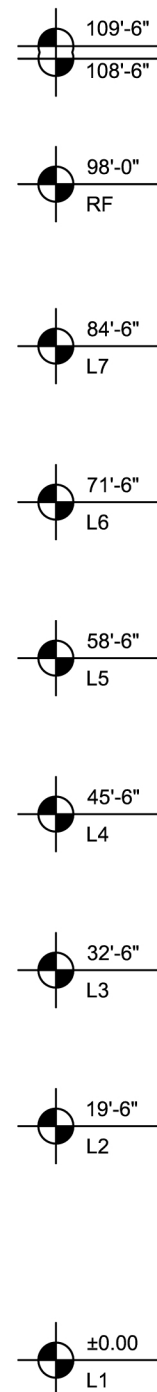
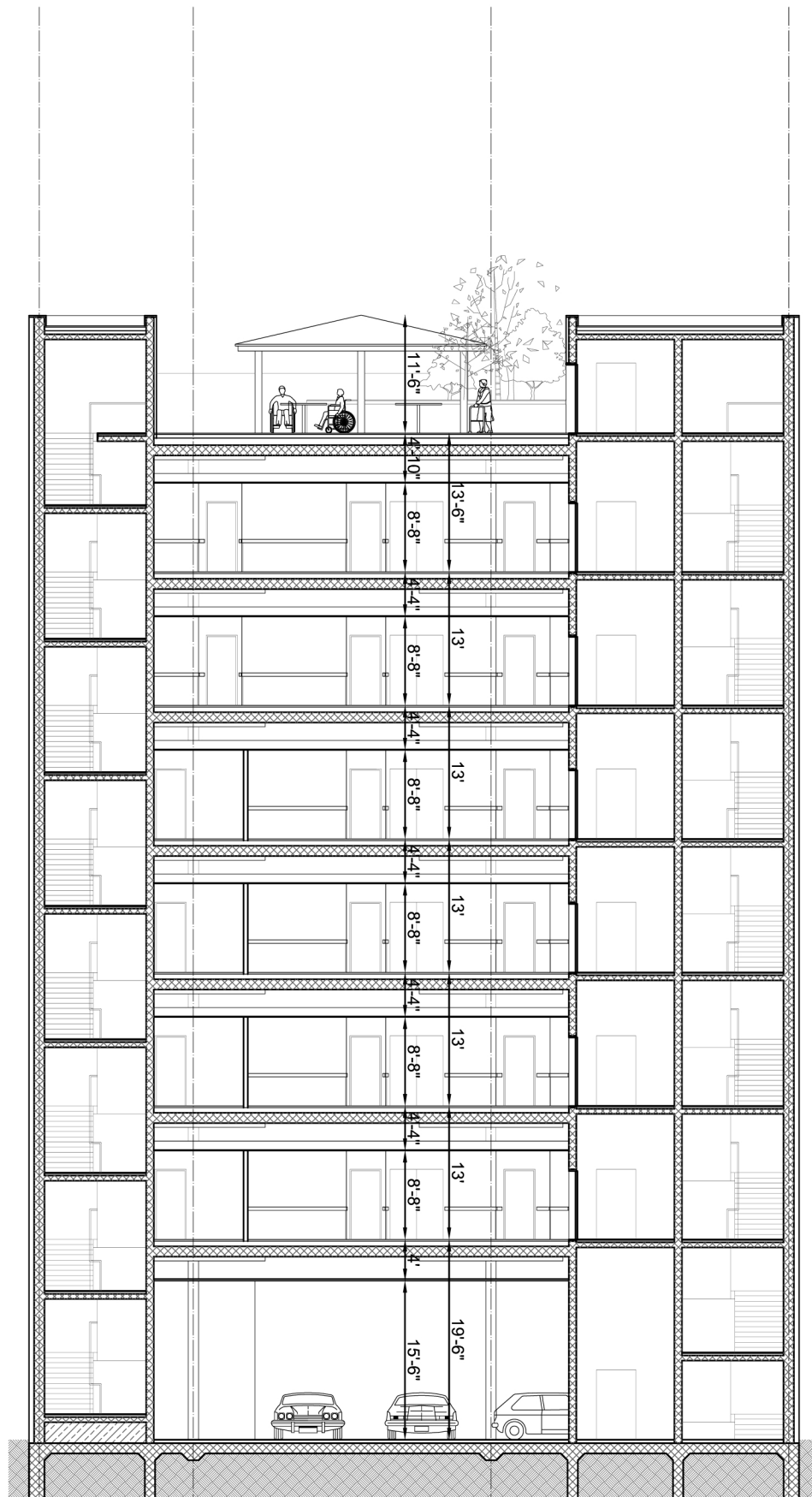




SECTION A-A
SCALE: 1/16"=1'

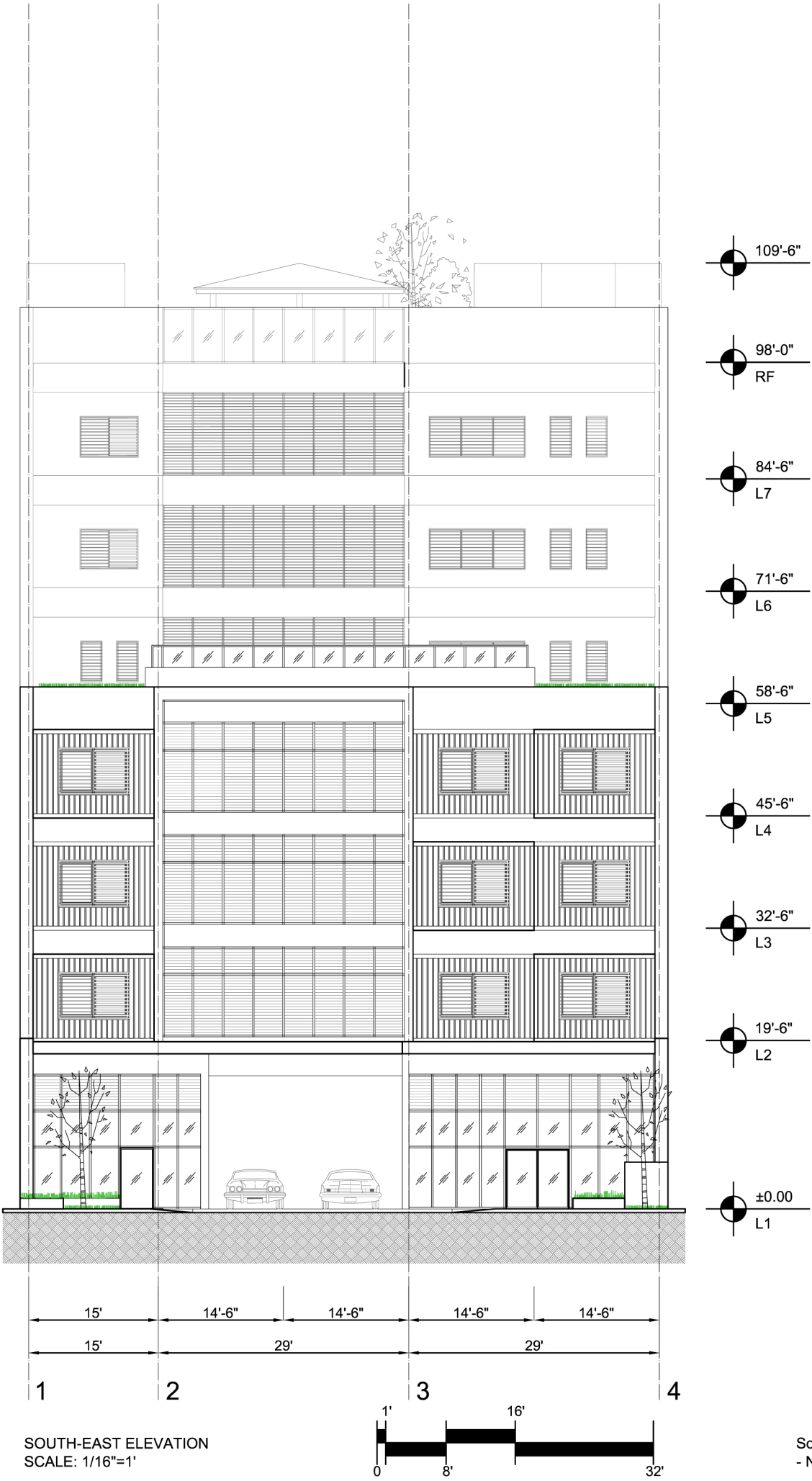


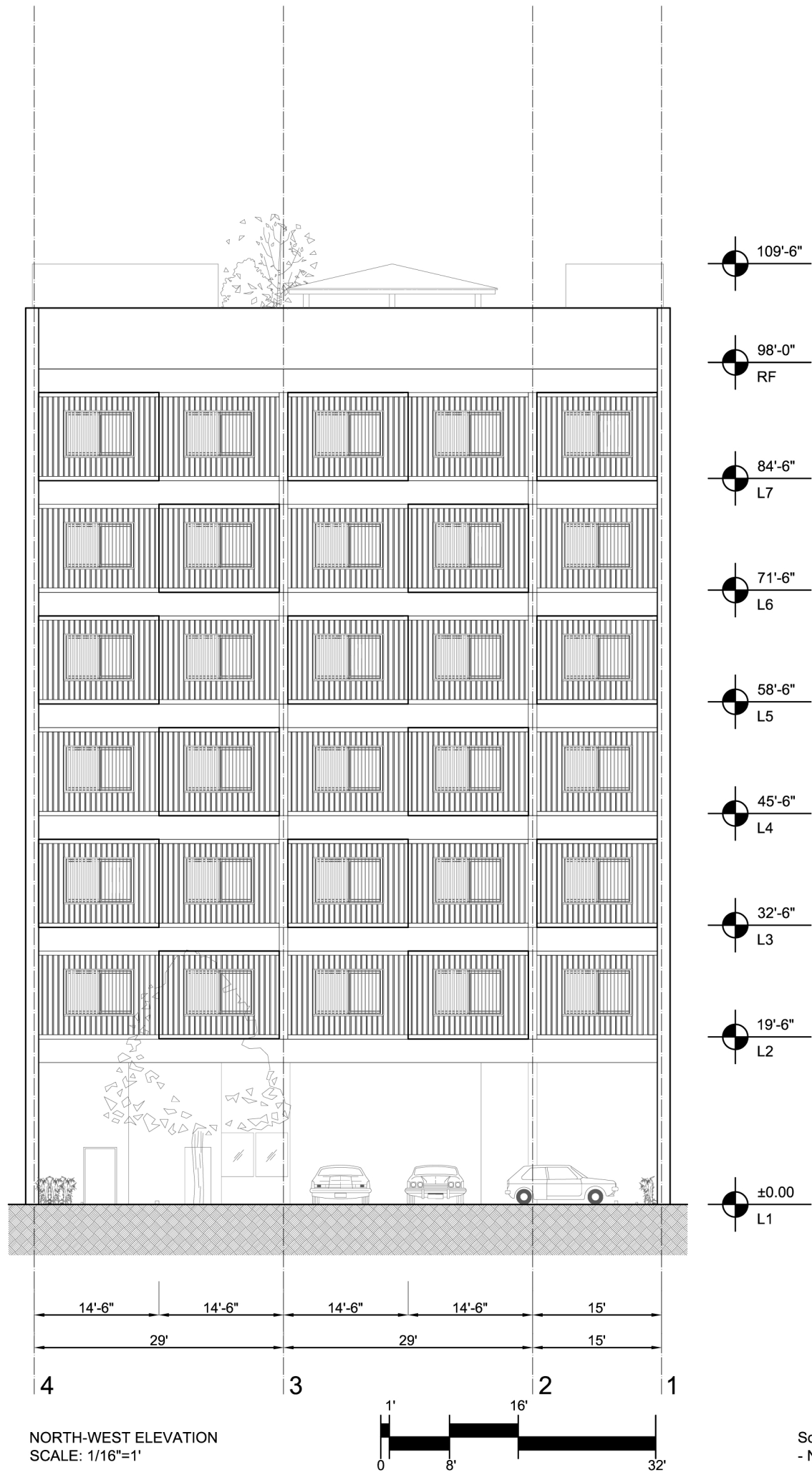
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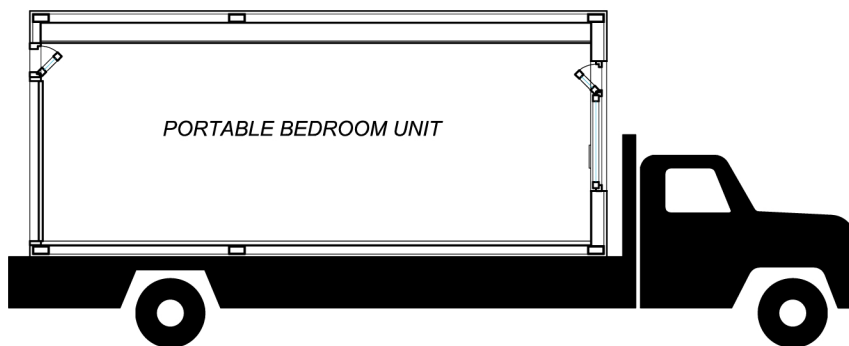


SECTION B-B
SCALE: 1/16"=1'

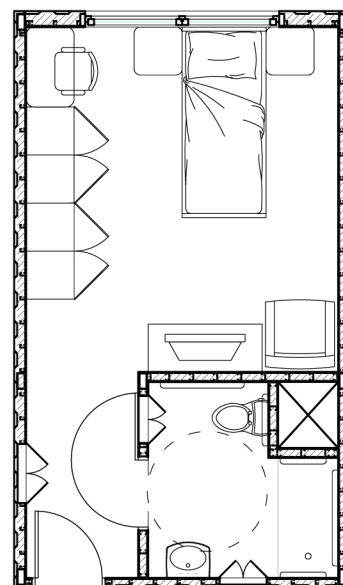
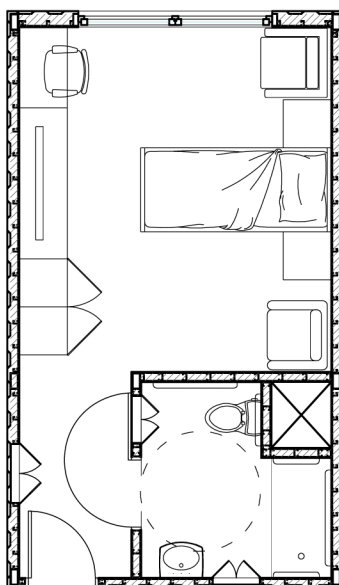
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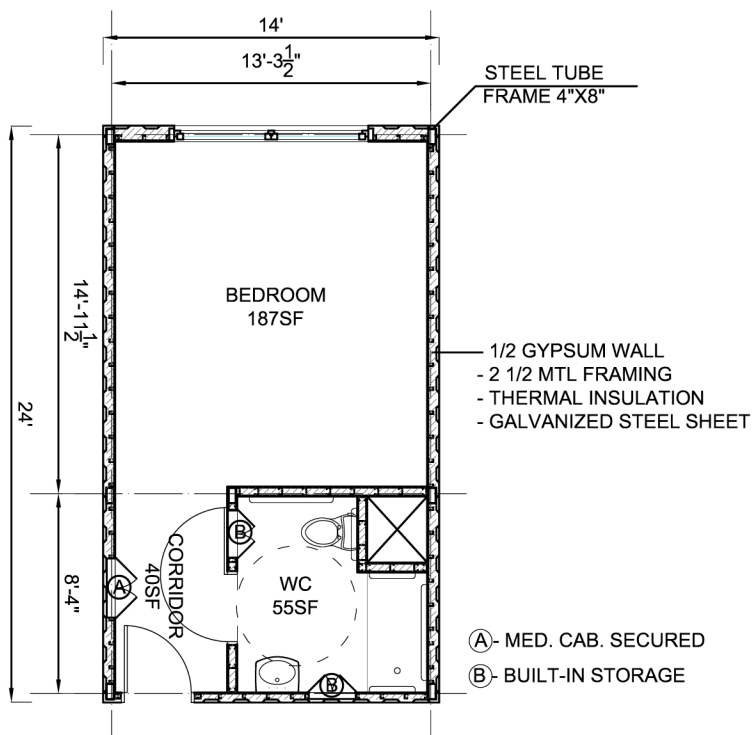
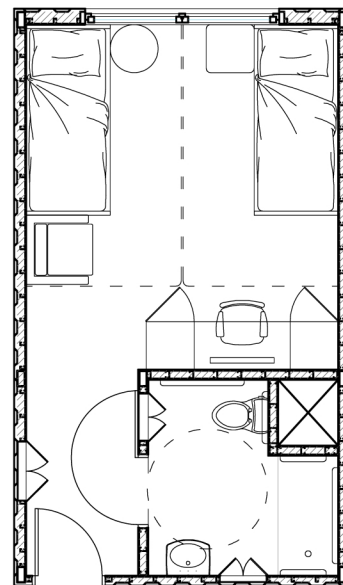
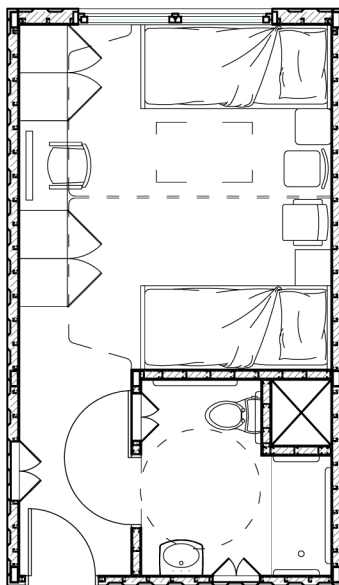




FLEXIBILITY: PRIVATE UNIT



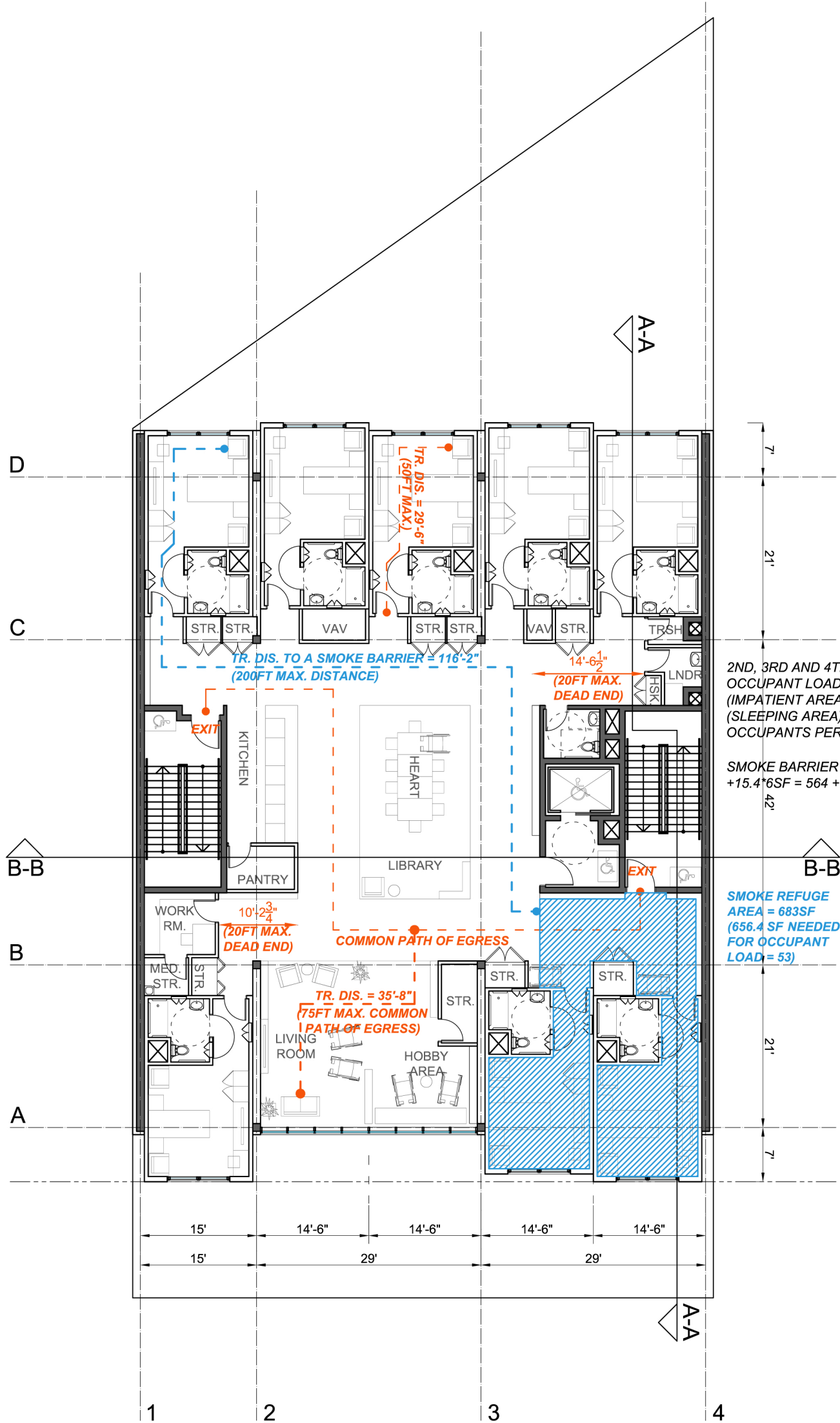
FLEXIBILITY: SEMI-PRIVATE UNIT



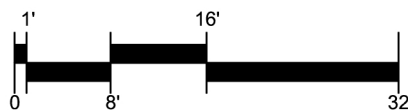
TYPICAL BEDROOM UNIT (282sf)
SCALE: 1/8"=1'



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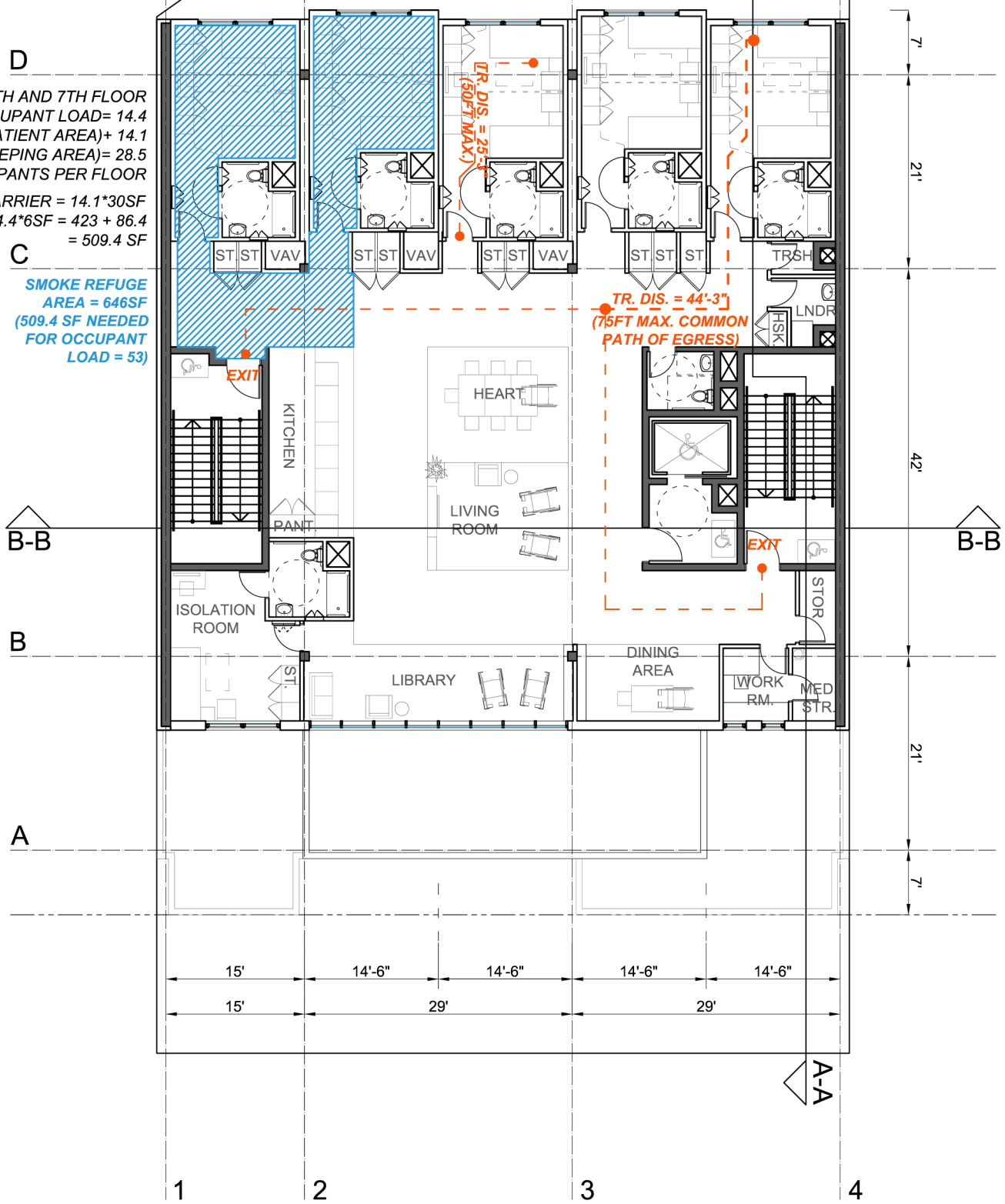
FIRE SAFETY - TYP. 2ND & 4TH FL.
SCALE: 1/16"=1'



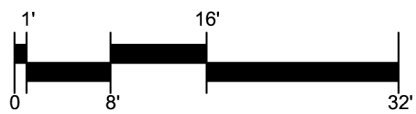
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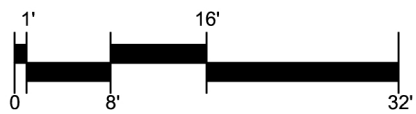
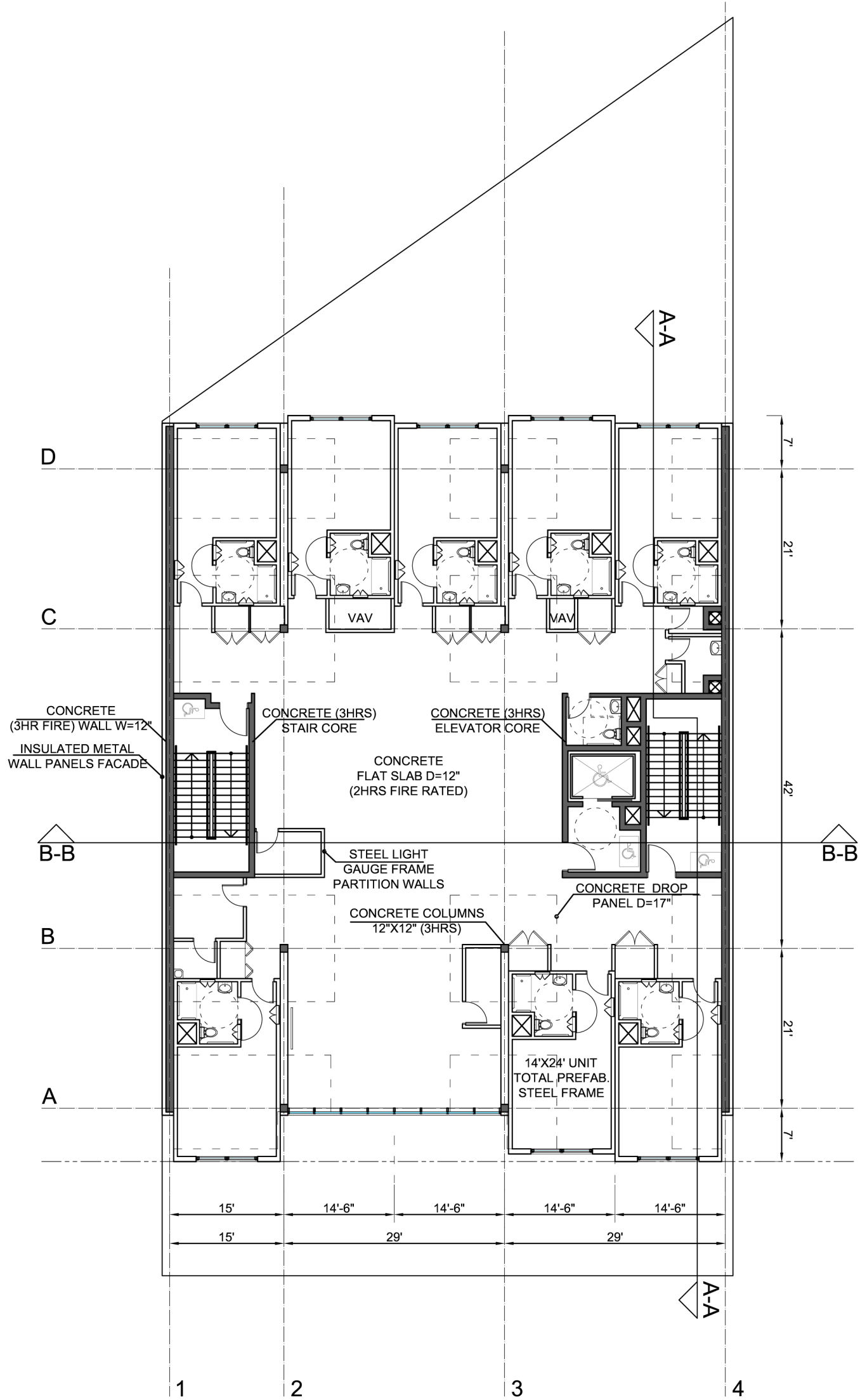
D
5TH, 6TH AND 7TH FLOOR
OCCUPANT LOAD= 14.4
(IMPATIENT AREA)+ 14.1
(SLEEPING AREA)= 28.5
OCCUPANTS PER FLOOR
SMOKE BARRIER = 14.1*30SF
+14.4*6SF = 423 + 86.4
= 509.4 SF

C
SMOKE REFUGE
AREA = 646SF
(509.4 SF NEEDED
FOR OCCUPANT
LOAD = 53)



FIRE SAFETY - TYP. 6TH AND 7TH FL.
SCALE: 1/16"=1'



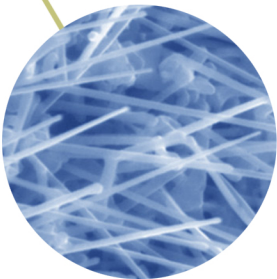


PREFABRICATED UNITS - COOKE STREET

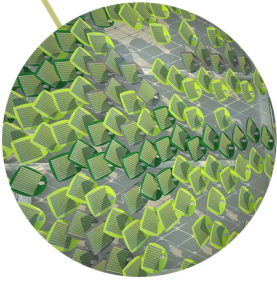


CONCRETE FLAT-SLAB WITH PREFABRICATED UNITS

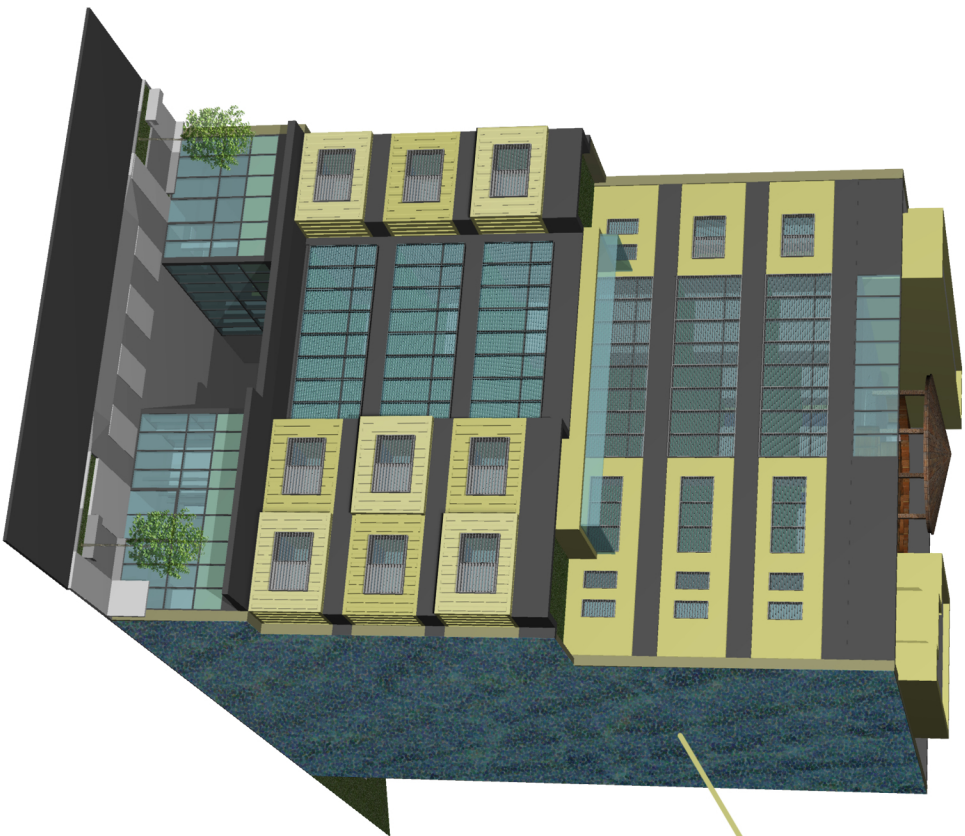
ENERGY HARVESTING WALLS



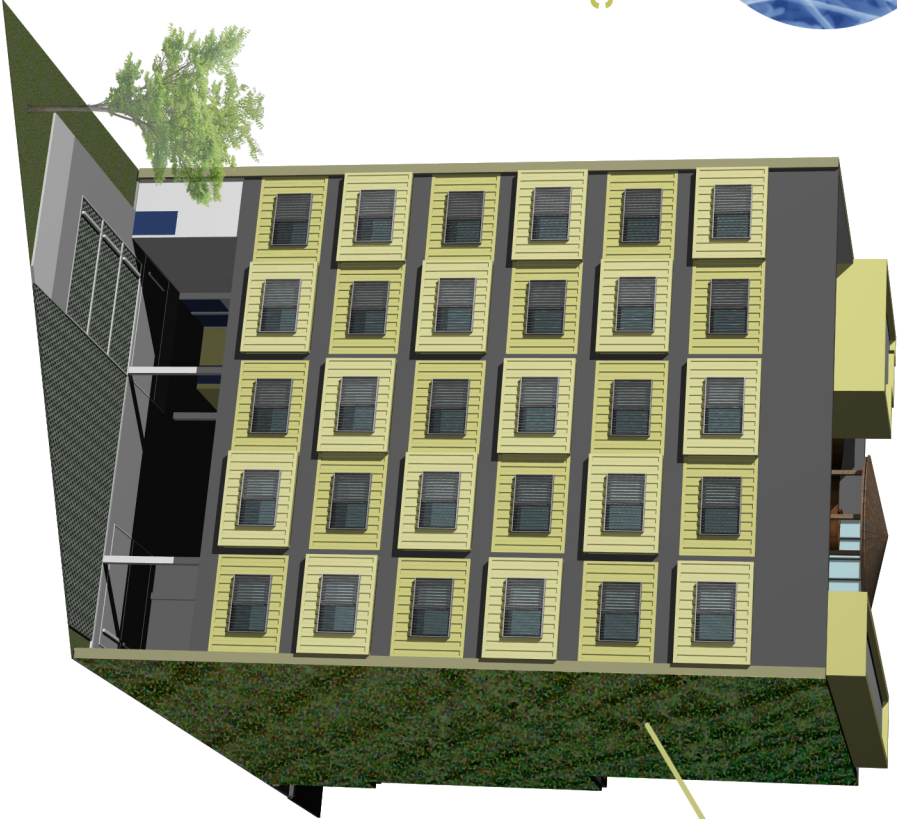
Piezoelectric
Nanowires



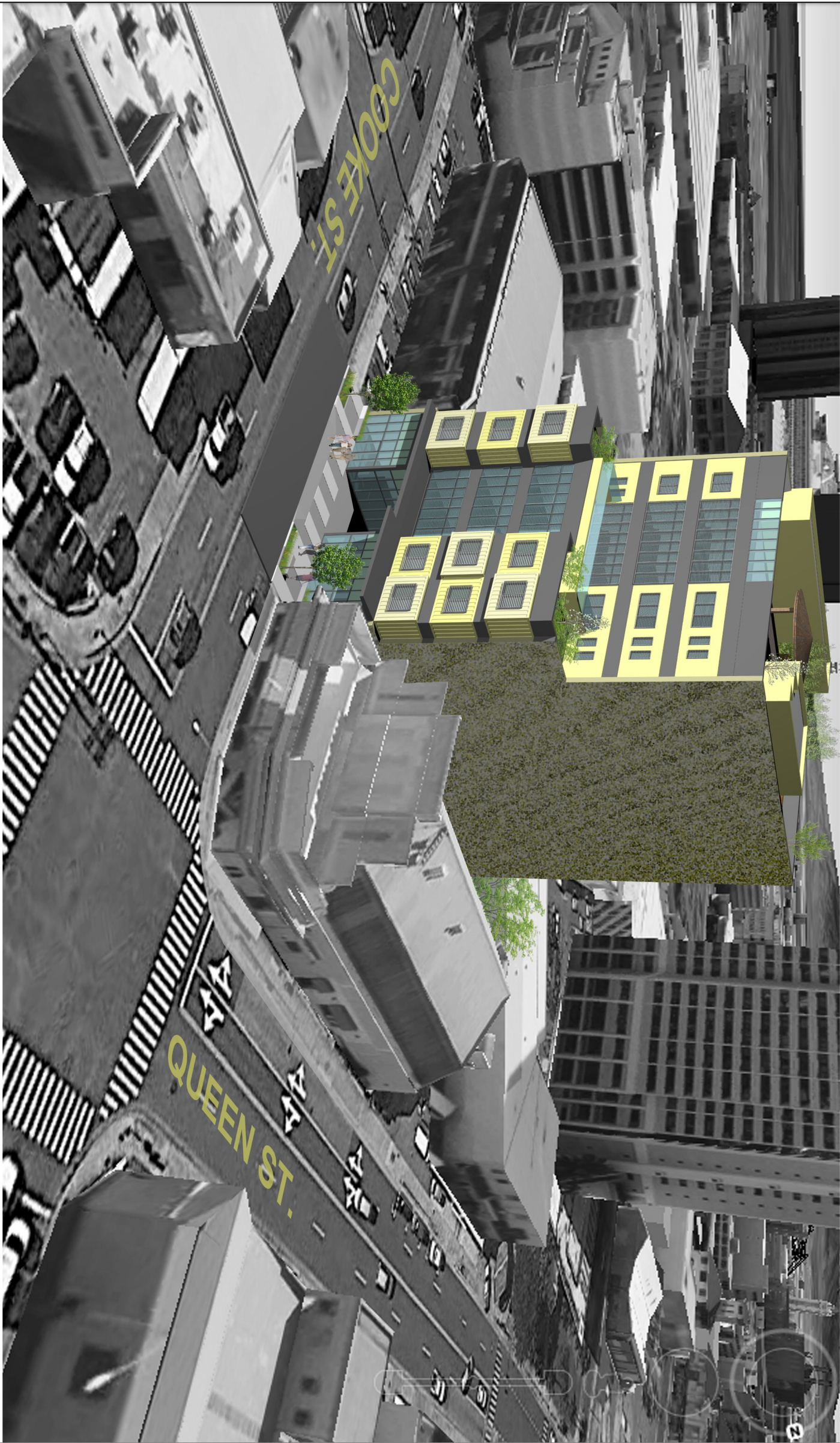
'Solar Ivy'
Photovoltaic
Leaves



COOKE STREET ELEVATION



COURTYARD ELEVATION



COOKE STREET ELEVATION

17. CONCLUSION

The demographic analysis shows that there are many elderly individuals (approximately 22% of the population) residing in Kakaako today. Even though I assume that many of the new residents coming to the neighborhood are young couples buying their piece of paradise in Kakaako, in twenty/thirty years they can significantly stack the statistics in favor of the elderly population. Therefore, I am proposing to think for the future and act now. My design is based on the current statistics, but it offers the flexibility for replication according to the determined real-time need. The small lot/small project idea contributes to the home-like memory care nursing unit concept which I believe people would rather use than a large, traditional facility type nursing home.

The Alzheimer's memory care nursing home is proposed in the central area of Kakaako, on the 10,409 square feet lot, owned by the Hawaii Community Development Authority, the States zoning agency. The site is purposely selected in order to allow for the nursing home residents communal integration. This is envisioned through the site's proximity to other senior housing rentals, schools and public amenities, such as the Mother Waldron park, the Gateway park, the Kawaiahao mini park and proposed Cooke street promenade. Furthermore, the selected site's hallmark is the possibility to be leased under extremely favorable terms to a nonprofit organization that proposes a project with a strong public purpose, such as this one.

The proposed project is designed for 55 residents afflicted with Alzheimer's disease. The building has seven floors and the total building area of 34,227sf, out of the allowable 36,431.5sf. The chosen structural system (prefabricated units combined with concrete columns and flat-slabs) allow for the project's adjustability to other lots of a similar sizes. This assures the project's replicability in case of shifting market demands. Furthermore, the prefabricated rooms are adaptable to house either one or two residents, depending on the market needs.

The project is proposed to be managed by a nonprofit organization following the Green House principles under a chain ownership structure. The Green House principles provide guidance for creating home-like environments in nursing homes under the state and federal provisions. The Green House model of operation ensures more direct care hours per resident under the lower operating costs than other culture changing and traditional nursing facilities. The Green House floor layout principles require a centrally positioned open-concept kitchen and living areas encircled by private ensuite bedrooms. In order to reflect the local socio-economic conditions, my proposal combines private and semi-private bedrooms on several Green House floors. Thus, the project accommodates both private-pay and Medicaid/Medicare residents.

The proposed Alzheimer's memory care nursing home project in Kakaako incorporates components that allow for better quality of care, communal integration, market demand adjustability, standardization of operations and construction prefabrication, in order to provide better and more affordable long term care services than other traditional nursing care options in Honolulu.

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